Fifteenth Year of Publication

Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

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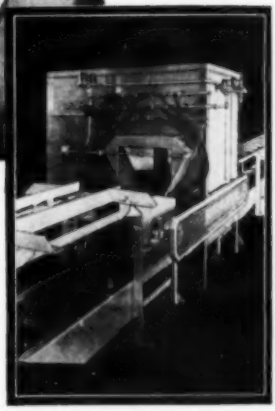
MODERN MIRACLES OF ENGINEERING GENIUS



Today INVISIBLE HANDS IMPROVE QUALITY AND REDUCE COSTS ON PRODUCT-FINISHING...

DEVILBISS AUTOMATIC SPRAY SYSTEMS

● Unseen hands are working miracles today in processing and finishing products to lower manufacturing costs — to improve quality — to speed up sales. That's modern DeVilbiss Automatic Spray Equipment!

These invisible DeVilbiss hands that function so efficiently and economically in modern industry are the hands of DeVilbiss craftsmen — with 50 years of spray engineering experience — who design and build the DeVilbiss Spray Equipment.

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Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

For Canvas Awnings

I would like to know if you can give me the name and address of any concern that makes a brown paint suitable for use on canvas awnings and umbrellas. It must be able to stand the weather and must have the flexibility of the canvas itself.—L. W.

Flo-Coating Equipment

Could you give us the names of some concerns that manufacture and install equipment for aluminum flow coating on bed springs and cots? For your information, we have already contacted one of the spray manufacturing companies that advertises in your magazine.—F. Mfg. Co.

We have referred this company to the other spray equipment manufacturers.—Ed.

Cedar Wood Oil

We are pleased to note the article you published in May 1939 issue, on the subject of Ced-R-Wood (pages 54, 55 & 56). We would like to have reprints made of this by offset, using the original copy of your write-up. On this we would give proper credit for the source, in that way distributing to the potential readers the valuable service your publication is giving. It would go to such lines as the leather, fiber board and cotton-finishing industries, which normally would not see your magazine, which is generally distributed to the paint and metal lines. "The Paper Mill," devoted to the interest of the pulp and paper industry, has asked us to write an article on the subject of the application of odor to paper. It shows there is an increasing interest on the part of many lines to the subject of "Aroma" in different materials.—The Sparhawk Co.

Spray Equipment

I am on a visit to this country . . . . I am in the wood heel manufacturing business. I have been fortunate in securing a copy of your magazine from a firm in Brooklyn, N. Y., and feel that it is a magazine that no factory should be without. I would greatly appreciate it, if you could put me in touch with manufacturers of the best spray guns, the latest machines for spraying lacquer on wood heels, etc.—H. M. (Representing British Wood Heel Mfg. Co.)

Finish for Zinc Alloy Die Castings

Reference is made to page 32, item 290 of the February 1939 issue of Industrial Finishing, this item having to do with the application of color on zinc-alloy die castings prior to plating, the adhesion of the material specified being such that the plating baths will not affect

"Unquestionable Quality" Wood Finishing Supplies

We never worked so hard and fast before — but *every single sample* placed in our care for "finish," was delivered in time for the "Show." Whether case goods, novelties, lamps or pianos — we got them out. "Ask the boys who saw 'em" — how they liked the new DOLAN FINISHES.

Maybe we can serve you, too — submit your "finish" problems to

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Whether you're cleaning metals, cleaning fabrics, or using a reducing solvent for paints and varnishes, SUNOCO SPIRITS meet all industrial demands for an efficient economical solvent. Write today for "CLEANING UP WITH SUNOCO SPIRITS" . . . the brand new folder you ought to read about industrial solvents.

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SUNOCO Spirits

PETROLEUM PRODUCTS FOR ALL INDUSTRIES

same. So that we can obtain further information on this subject, will you kindly direct this communication to those parties responsible for the development of this material?—O. O. Co.

K. D. Furniture

Will you please send us information on manufacturers of furniture in the knock-down?—Carter Novelty Works.

Exterior Finish for Stone and Marble

We note in INDUSTRIAL FINISHING, April 1939, page 65, an inquiry under the above title. If this inquiry is in regard to the preservation of both new and old stone, marble and granite, in order to prevent checking and sprawling and to provide water-repellency, we can supply the necessary information by the use of "Drigard." In addition, polished surfaces can also be obtained on marble.—Drigard Products Corp.

Ready to Help

I noticed several inquiries in your April issue that were of particular interest to me. I am referring to your "Letters from Readers" section. If you will forward the names of these companies to me, or have them get in touch with me, I may be able to help them. I am connected with a prominent manufacturer and this may develop into some business for us.

1) Transparent Preservative Coating—B. C. Co. (page 62).

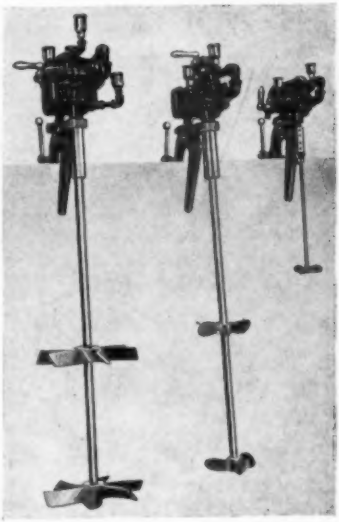
2) Exterior Finish for Marble or Stone—O. Marble Co. (page 65). In this case, is the finish to be pigmented or clear? Is the stone or marble rough or smooth? I have used several types of finishes for cases of this type. Much of the success of a finish of this type depends on the environment and conditions involved.

3) Paint Formulas — E. O. Co. (page 3). I do some work on the side and I may be able to help this concern if they are interested.

4) The movie outfit interested in preserving foliage (page 62). This is a peculiar situation and I don't believe latex is going to be of much help, as this material contains ammonia to help the emulsification. Besides, latex doesn't give a very clear film. I have a few suggestions to make but I wont guarantee their efficiency. If they are inter-

PNEUMIX

Air Motored Agitators



- SPARK-PROOF, SPLASH-PROOF.
- NO FIRE OR EXPLOSION HAZARDS.
- VARIABLE SPEEDS—ANY RPM.
- SIZES FOR EVERY REQUIREMENT.

A user of large quantities of finishing materials writes:

"The units are fulfilling their requirements perfectly. Their function is to keep the pigments in suspension at all times. This is very easily regulated on your unit as the speed controls can be varied so easily. The air mixers serve our requirements 100%."

Write for Free Data Folder

Eclipse Air Brush Co., Inc.

Makers of Low Pressure Spray Equipment

392 PARK AVENUE NEWARK, N. J.

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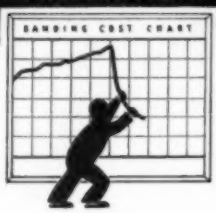
DOWN
YOUR SANDING COSTS!



WITH A

STERLING

***Speed-Bloc* SANDER**

Today, more than ever, production men have to put greater stress on cutting of costs. The Sterling Speed-Bloc Sander meets this situation.

This fast, efficient tool is daily saving 25% to 75% in labor and abrasive costs in leading plants over the country. It will save plenty for you.

Users say: "Sterling not only cuts costs but produces finer quality work."

A demonstration costs you nothing. Being without a Sterling DOES cost you something. Ask for a demonstration NOW.

Sterling Products Co.

2463 Woodward Ave. Detroit, Mich.

ested, I will be glad to oblige in any way I can.

I hope it won't be too much trouble to let these people know. If you like, just send me their addresses.—S. N. W.

We are glad to forward you their addresses, and we feel sure they will appreciate hearing from you. This service is conducted for the benefit of all present and prospective readers of INDUSTRIAL FINISHING—to find out what thousands of industrial concerns want, and then to supply them with the information promptly.—ED.

Whirling Machine

In your INDUSTRIAL FINISHING for March 1939, with reference to a whirling machine for dipping and then rotating to throw off excess material, please send me the names of manufacturers of this type machine.—W. C. A.

We cannot speak too highly of the valuable information contained in your publication, INDUSTRIAL FINISHING, and we look forward to its arrival each month. Reading through your book, we see some inquiries for self-luminous paint. An associate firm of ours is using luminous paint excited by ultra-violet light, which is very effective . . . . Enameling Co., Melbourne, Australia.

Transparent Coating

In your April issue, page 62, I notice an inquiry for a "Transparent Preservative Coating." I believe that I have just what the company is looking for. After years of experimenting I have finally perfected a protective pliable cellophane-like coating . . . . While the coating adheres to a paper surface, it can be peeled from metal. I could do more to convince you if I had samples on hand on which a coating could be applied . . . . D. L. J.

Editor's Note: Samples of combination drink stirrers and cherry picks, which D. L. J. sent us with the above letter, are slender but shapely sticks of cardboard printed in colors and coated with a transparent finish that adheres perfectly, stiffens and waterproofs the card-

board, and gives the paper "Stir-Pics" the appearance of being strips of solid celluloid about 1/16x5/16x6-in.

Infra Red Ray Drying Equipment

IF POSSIBLE PHONE US COLLECT NAMES OF LEADING MANUFACTURERS INFRA RED RAY DRYING EQUIPMENT.—W. E. CO.

One of these companies advertises in INDUSTRIAL FINISHING, see page 66, May 1939 issue.—ED.

Referring to your INDUSTRIAL FINISHING for April 1939, on page 5, where you mention the source of supply for infra-red lamps for drying, may I inform you that lamps for this purpose are manufactured and sold by the G. E. Co. These are tungsten-filament lamps which have the advantage of a higher radiation temperature for a given life.—G. E. Co.

Recently I saw, on one of our cutsomer's desks, a copy of your INDUSTRIAL FINISHING which contained an article on the use of infra-red rays in the paint-drying process. I would like a copy of this publication for my files . . . . W. A. B., Local Engineer, Consumers Power Co.

In your March issue, on page 48, you have an article referring to infra-red ray lamps for baking out enamel finishes. We have been trying to get in touch with the company that manufactures these lamps but have not been able to reach anyone or get any information along these lines . . . . —T. C. Mfg. Co.

Pearl Essence

In your April issue of INDUSTRIAL FINISHING, beginning on page 27, you carry an interesting article concerning pearl essence finishes. We have been using pearl essence for some years on all of our art work, and believe we are leaders in this line—but from the start we have been bothered with yellowing. We have tried several different water-white lacquer vehicles and have written to the different companies regarding the yellowing, but they all say that it is not possible to make such a lacquer that will not yellow in time.

The best vehicle we have tried thus far is made by L—— S——, a

(Continued on page 65)

A partial list of

WALKER'S FINISHES

Fillers
Primers
Enamels
Thinners
Pencil Lacquers
Cable Lacquers
Wood Lacquers
Metal Lacquers
Silver Lacquers
Textile Lacquers
Maintenance Paints
Automotive Finishes
Machine Tool Finishes

The Emblem of Quality in Finishes

The above list is by no means complete, but we trust it will serve to give you an idea of the extent to which WALKER'S chemical staff has solved problems submitted to it.

H. V. WALKER CO.
ELIZABETH, NEW JERSEY

FINISHES
To Fit the Product

New England Warehouse
BROWN & DEAN CO., Providence, R. I.

How to Take Care of Yo

BY EDWARD H. FRANCIS

SPRAY equipment maintenance differs from the maintenance of most other mechanical devices. The nature of its service requires daily care and cleaning to assure continued satisfactory results. If this maintenance is systematized as a daily routine, it becomes a simple and rapid procedure. *Neglect of the spraying equipment, which is the most common cause of various spraying difficulties, will increase production costs through poor finishes, frequent delays and additional upkeep expense.*

Other factors that contribute to unsatisfactory spray finishing include: Improper installation of equipment, the use of an incorrect spray gun for the work, inadequate lubrication, and infrequent or improper cleaning of spray equipment.

Installation of Equipment

Locate the compressor where it will receive an abundance of cool clean dry air. Mount it on a level foundation and allow room around it for lubrication, repairs and drainage of the air tank.

The compressor should be furnished with an efficient air intake strainer that can be easily cleaned or replaced. This strainer should be inspected periodically. The strainer assists in supplying clean air to the spray gun and prolongs the efficiency and life of the compressor.

Place the air transformer (pressure regulating and air

# of Your Spray Equipment

To produce satisfactory results, spray equipment must be carefully selected, properly installed, skillfully operated, correctly adjusted and regularly cleaned. In this two-part article the author directs attention to various parts that get out of order, analyzes numerous causes of spray difficulties and reveals some practical information about installing, maintaining and cleaning modern spray apparatus.

cleaning device) in a convenient vertical position, far enough from the compressing unit that the compressed air may cool before reaching it.

The pipe line joining the compressing unit and transformer should slant, in its horizontal run, slightly toward the air transformer. At certain convenient points, drop legs of pipe with drains in the bottom should be placed in the pipe line for the accumulation of all moisture. The verticle line of pipe from the transformer should join the horizontal main supply line at the top. The transformer, drop legs and air receiver of the compressor should be drained frequently to prevent excessive accumulation of moisture.

Air hose and pipe lines must be of sufficient size for the length of run and volume of air handled. Undersize air lines cause excessive pressure loss which is not usually evident to the operator, but it may result in insufficient atomization and poor finishes. Airlines can be checked for pressure loss by placing a pressure gauge in a T-fitting and installing same between the spray gun and air hose. Read the gauge while the gun is in operation.

The Spray Gun

Due to the diversity of present-day spraying operations, the modern production spray gun must be supplied with a large variety of interchangeable spray-head combinations (air cap, fluid

tip, fluid needle, etc.). Each combination is designed to produce the best results, with more or less specific types of work, material and material-feed systems. To avoid difficulty and to assure the most satisfactory application of material, it is best to ascertain the recommendations of the manufacturer for each sprayhead in use.

Lubrication of Spray Gun

All moving parts and bearing surfaces of the spray gun should be lubricated with light oil or vaseline.

If it has been necessary to immerse the gun in cleaning solution (not recommended except in extreme cases) all parts requiring it should be lubricated immediately after cleaning. Place a few drops of light oil on the air valve stem and fluid needle daily. Keep all packings (fluid needle, etc.) soft and pliant by occasional oiling. This is especially important. Coat the fluid needle spring with vaseline or light grease.

Cleaning the Spray Gun

Always clean the spraying equipment immediately after use, with a solvent suitable for the material used. Never use a caustic alkaline solution for cleaning, as this will attack aluminum alloy. If the equipment is cleaned while the finishing material is wet, it can be done thoroughly with a minimum of time, effort and cleaning solution. Dried particles of finish remaining in the gun, cup, tank or hose are a constant source of trouble.

Do not dismantle the gun or immerse it in solvent for cleaning unless the material has become dry in the passages. Simply spray (if it is a suction-feed system) or flow (if it is a pressure-feed system) the cleaning solution through the passages until they are clean. To clean the exterior of the gun, wipe it clean with a cloth saturated in solvent. Blow all parts clean with compressed air.

If the air cap requires cleaning, remove it from the gun and immerse in solvent. To remove paint from the holes of the air cap, use a toothpick, match stick or sliver of wood. Never use a wire, knife, or metal article, as this may damage the cap and permanently distort the spray.

Spray Gun Troubles; Their Causes and Remedies

Distorted Spray—Look for a dirty or damaged air cap or fluid tip. To remedy this condition remove and clean the cap. Wipe the exterior of the tip. If any parts are damaged, replace them.

Split Spray—Generally caused by too much atomizing air pressure, or the spray may be adjusted too wide.

Air Leakage from Front of Gun—The air valve may not be seating properly. Clean and oil the valve stem. Inspect the valve spring. Clean the valve seat.

Fluid Leakage from Front of Gun—The fluid needle may not be seating properly in the fluid tip. Inspect this for the presence of dirt or a lump of material in tip. The trouble may be caused by a bent or wrong size fluid needle (needles and tips must correspond in size). The fluid needle packing-nut may be too tight. Remove and lubricate the packing. Perhaps the fluid-needle spring may be broken.

Jerky or Fluttering Spray—

This is caused by air mixing with material in the fluid line. Look for: 1) A loose or damaged fluid tube; 2) a clogged air vent in lid of suction cup; 3) a loose fluid-needle packing nut, or dry packing in the gun; 4) loose fluid tip in the gun.

(To be continued)

Industrial Stylist Will Make Products More Attractive

Will Funston, industrial stylist, has announced the affiliation of his firm with Trinity Associates, Inc., publicity and sales promotion organization. The expanded activities of the two related companies will include style analysis and the creation of balanced merchandise lines, primarily in the home furnishing and equipment fields, together with the publicizing and promotion of such products. Both organizations have headquarters at 23 E. 31st St., New York, N. Y.

Mr. Funston, whose style counsel is in demand both here and abroad, and Robert Nathans, head of Trinity Associates, expressed the belief that the consolidation of styling and promotion services will lead to more effective merchandising by manufacturer and retailer. A continuous survey of home furnishing sales in all trading areas and all price lines will be conducted by the two companies. The relative demands for colors, patterns, materials, periods and other style factors, as well as home building trends and existing decoration, will be used as a basis for creating and promoting well balanced lines.

Mica Used in Paints

Announcement has recently been made of new paste pigments leafed in a neutral oil with no stearic acid present. Of special interest is the fact that the salts of chromium as metal are in solution in this oil, which metallic salts are not in an emulsion or soap phase.

It is claimed that these active chromium salts add not only rust inhibitive values to the paste, but also act as an agent to inhibit electrolytic and hydrolytic activity.

One of the factors in this new process is the use of an inert 1000-mesh mica developed by The English Mica Co. This fine mesh mica in this chromized oil paste form is known as Chromica, and is moisture free. It serves as a laminated auxiliary pigment to carry the inhibitive properties of these chromium salts to metallic and oxide pigments, and further acts as a suspending agent, without changing the mastone shade.

The points of interest in the pigment Chromium (aluminum base) paste pigment are the contentions that this pigment has rust inhibitive value and a changed electrolytic value which permits its successful use in a prime coat over metal surfaces.

Somers Color & Pigment Co., of 41 E. 42nd St., N. Y. City, is the national distributor of these new catalytic paste pigments which are known as Chromica, Chromium, Chromcopper and Chromlead.

Silk Screen Book—$1.00

An informative book of 46 pages 7¾x10½-in., spirally bound between heavy colored paper covers, explains and illustrates in detail how to make silk screen stencils and how to do silk screen process printing and decorating. The author, Mr. M. E. Dowling, has had extensive practical experience in silk screen process work. In this book he has handled the subject so clearly and expertly that beginners can easily learn the methods from his directions and illustrations. Copies are available at the very low price of $1.00 each. Address the Artset Co., 21 Kentucky Ave., Indianapolis, Ind.

Kitchen, Bathroom Colors

Krebs Pigment & Color Corp. (Division of Du Pont) has released a booklet that describes the chemical dry colors required for matching two commercial standards of the National Bureau of Standards, which is doing constructive work towards color harmony, simplification and uniformity. The standards are CS-62-38 Colors for kitchen accessories and CS-63-38 Colors for bathroom accessories.

The company has issued with the booklet, two color exhibits, one for each of these standards, including eleven shades. The exhibits and data are designed to facilitate the formulating of paint, lacquer and oleoresinous enamel products. The booklet says that acceptance of these standard colors will help the manufacturers to avoid losses from slow turnover, distress stock, and obsolescence which formerly occurred.

Finishing Steel Cabinets

This illustration shows one of the portable overhead conveyors that serves each spray booth. Helpers hang and remove parts from traveling hooks, so that spray operators can work continuously. Each spray operator is relieved from time to time. Photograph, courtesy of Ward Refrigerator & Mfg. Co., Los Angeles, Calif.

IN THE METAL CABINET plant of Ward Refrigerator & Mfg. Co., Los Angeles, Calif., the body metal chiefly used is galvaneel. Small pieces are dipped and washed in a cleaning solution and allowed to dry thoroughly in a warm room before being painted. The larger parts, such as the outside casings, tops and doors are prepared for painting by washing with a special solution made for this purpose. Naturally, all grease, smudges and finger marks are removed before coating.

The paint shop is laid out in the form of a square, with a drying room in the middle, as shown in the accompanying layout. This drying room is kept at a temperature of 110° F. All of the cleaned

for Refrigerators . . .

BY ORRIE D. MAAL
with S. C. Johnson & Son, Inc.

Metal cleaning; water-wash spray booths; materials piped to spray operators; bake finishing; glazing; sanding; inspection; finish coats; touch-up work; tests for durability; special precautions.

and washed parts are placed on trucks and moved into this room to allow them to dry thoroughly. From this drying room the parts start on a trip around the paint room, first going to the sanders and inspectors, and on to the spray booths for the primer coat.

The main secret of obtaining the final high degree of smoothness on the finished surfaces lies in the application of this prime coat. It is essential to find out just how much thinner the primer requires for smooth spraying, as well as to know how to apply the exact thickness of primer to hold up the finish coat for a 2-coat job as well as for 3-coat work. If the primer is applied correctly, with the proper kind and amount of thinner for the job, it will require very little, if any, sanding before the next coat is sprayed on.

Food compartments are the most difficult to spray, as the fog from the spray gun has only one way to get out, which is toward the spray operator. Here the most care must be taken, as this compartment must stand contact with practically everything in the food and drink line. That's why this part of the refrigerator must be smooth as glass when finished.

Racks loaded with the different refrigerator parts are left outside the electric ovens for about 15 minutes to allow the thinners time to evaporate before entering the hot ovens.

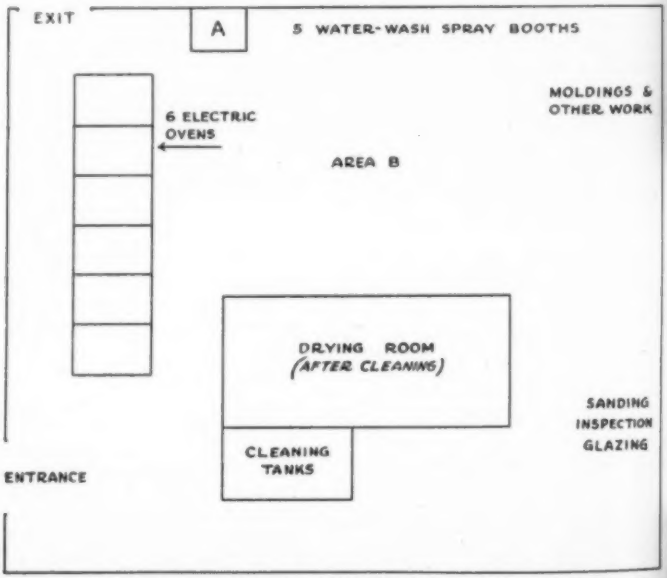
Primer Bake; Glazing; Sanding

The primer coat is usually baked at temperatures of 325° F. for one hour. Some manufacturers recommend 400° F. for 30 minutes. I find that the baking temperatures cannot always be worked as recommended by the paint manufacturer, due to oven conditions, the kind of solder used, etc. However, experience has shown that the higher baked

finishes are more resistant to water and grease. Later in this article I'll explain what is expected of these refrigerator paints and how to test them for best results.

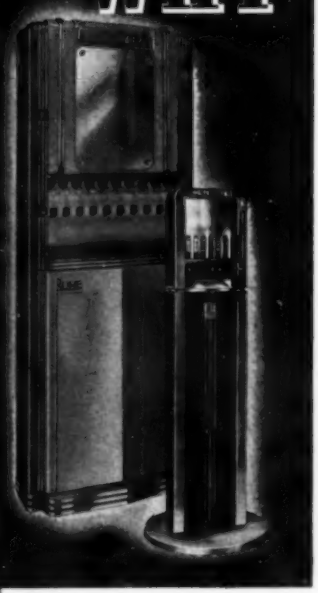
After the primer has been baked the parts are allowed to cool for a few hours. Then sanding and inspection begins. As I said before, if the primer is properly applied, very little sanding is needed. However, there are always places that need attention; for example, small dents, scratches and bumps in the iron, and partly open joints that cannot be seen before the primer bake, but which loom up after the prime coat has been baked on. These defects must be taken care of by glazing and sanding. The glazing material or putty used by this concern is furnished by the paint manufacturer. It sets up quickly and can be sanded in a few hours. It can be thinned out to be sprayed from a touch-up gun, if desired.

We are now ready for the second or last coat. Correct air pressure, proper thinning, and careful handling are the secrets of getting a smooth glass-like surface finish. Of course, if the enamel is not to be thinned, it is up to the paint manufacturer to supply it in the proper consistency and "wetness." This is easy enough where the paint shop is



A sketched layout of the metal-cleaning and finishing department. Area A shows the location of material supply room from which primer and enamel are piped to spray booths. Area B is space for work that comes back from ovens for another spray coat.

WHY



Here are two of the popular Rowe Vending Machines—one for cigarettes and the other for gum and mints. Both are finished with Polymerin.

WHO USES POLYMERIN—Leading manufacturers of products like these are using Polymerin: Washing Machines • Ironers • Kitchen Cabinets • Stoves Vending Machines • Bicycles • Gasoline Pumps • Coolers • Enclosures Hospital Equipment • Electric Fixtures Clock Cases • Office Equipment.

If you make similar products, investigate Polymerin, the original speed-bake finish!

LEADING MANUFACTURERS ENDORSE POLYMERIN FINISH

POLYMERIN Protects Rowe Vending Machines

ALERT MANUFACTURERS in many industries have adopted Polymerin, the original speed-bake metal finish, to get the revolutionary production and sales advantages which this remarkable finish provides.

In the vending machine field, Rowe Manufacturing Co., Inc., the largest manufacturer of cigarette vending machines in the world, uses Polymerin to finish the exteriors of its handsome products.

Vending machines must stand an extraordinary amount of abuse. They are subject to all sorts of nicking and scarring. They must not be affected by liquids spilled on them. The fact that Rowe chose Polymerin as the most practical finish to protect its machines and keep them attractive is a tribute to Polymerin's durability.

Polymerin gives Rowe machines a high-lustre, porcelain-like finish—a finish with extraordinary chip- and mar-proof properties. It will resist alcohol, perspiration, and all ordinary deteriorants which might discolor the surface of a vending machine.

Polymerin Speeds Production!

Rowe takes advantage of the color variety which Polymerin offers; their popular machines are finished with Polymerin in snow-white, copper, maroon, red, brown, blue, yellow, green, orange, gunmetal, slate, and delicate pastel shades.

Rowe and other manufacturers who use Polymerin, get important production advantages from Polymerin's remarkable speed-bake characteristics. Amazingly fast schedules that save production dollars are possible with Polymerin, yet at no sacrifice in durability! Polymerin provides a beautiful finish that is exceptionally tough and resistant.

Investigate Polymerin! Let it bring you the advantages that Rowe and other leading manufacturers enjoy! Write today for further information.

AULT & WIBORG CORPORATION

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FACTORY IN CINCINNATI, OHIO

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THE ORIGINAL SPEED-BAKE METAL FINISH

Another BINKS Masterpiece

Binks SPRAY SYSTEMS

A Smaller, Highly Efficient Spray Gun — *for Lighter Work*

Here at last is the light duty Spray Gun you have been waiting for. Handles all types of materials—lacquers, synthetic enamels, oil paints, etc. The ideal gun for light duty work in manufacturing plants and auto shops. Light weight and easy handling make the New Thor 16 especially suited for women operators.

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properly air-conditioned, but where there is no air-conditioning, weather conditions have a lot to do with the final results.

Materials Piped to Spray Booths

The plant I am writing about has all five spray booths lined up to spray from one tank line. Material tanks are kept in a special room in which the temperature is maintained at about 80° F. One man does all the mixing and attends to the control of air pressure, etc., so the paint comes to all spray operators under exactly the same conditions.

Both primer and finishing enamels are strained into these tanks through a strainer that has a very fine copper mesh bottom—a precaution that is quite important, regardless of who made the paint. The material tank is kept closed until it needs refilling. This prevents any foreign matter from entering the supply line. Of course, this still leaves the human element to contend with, as all spray operators are not equally efficient. It is up to the foreman on the job to see that the spray men all apply the proper coating and hold their spray guns the correct distance from the surfaces being sprayed.

Finish Coats of Enamel

On a 2-coat job the glazing and touching-up naturally leave a spotted surface on the primer, therefore the finish coat must be sufficiently heavy to cover all this.

The usual bake on this finish coat is 280° F. for 30 minutes. If the finishing enamel is of the right kind, it will allow a leeway of 10° one way or the other without showing any change in color. On this depends the secret of a nice even finish all over, as the doors, tops and other parts are not always baked at the same time in the same oven. Sometimes the finishing of the body or shell takes place several weeks earlier or later than the finishing of the smaller parts of the refrigerator. When all of these finished parts reach the final assembly department they must match, regardless of when or how they were baked.

Where two finish coats are applied, as in a 3-coat job, the second coat (first finish coat) need not be heavy enough to perfectly cover and hide all of the glazing spots, as the third or last coat will take care of the coverage. This last coat is also baked at 280° F. for 30 minutes.

Inspection; Precautions

After all parts are assembled and the refrigerator is complete, ready for the shipping department, final inspection takes place. If a few particles of dust are imbedded in the finish, say in the top, these can be buffed out easily with an electric buffer. Any other damaged places, like small scratches or bumps, are touched up with a special touch-up lacquer made to match the baked finish.

One more thing regarding the coating of doors and such; this spraying should be done while the door is hanging in its natural position, in order to apply the same amount of primer and finish enamel as on the body. If the doors are laid out flat, there is a tendency on the part of spray operators to load them with heavy coats of finish because there will be no trouble with runs or sags. If this is done the doors will differ slightly in appearance from

the remainder of the refrigerator. The top of the refrigerator should naturally look the best, so it is coated in its natural position.

Tests to Meet Requirements of Refrigerator Finish

Door moldings made of Masonite are first filled with a good wood filler. Then two coats of high-gloss black baking enamel are applied, and each coat is baked the proper length of time. The filler is used to stop suction and to waterproof the moldings.

Now we come to what is expected of this refrigerator finish. First of all, we know it must be white and must remain so. Also, it must be practically foolproof against hot and cold water, salt water, soft drinks, alcoholic drinks, butter, milk, cooking oils of all kinds, and violent changes in weather conditions, humidity, etc.

A manufacturer doing a national business finds that some of his refrigerators go to localities that differ widely in temperature, humidity and general atmospheric conditions; for example to the extreme southern parts of Florida and Louisiana, to the Mojave Desert or Death Valley, to northern states where the temperature gets far below zero, in the mountains where the air is dry, and near the ocean where the salt air is plenty destructive.

Tests must be made to meet all these conditions. Naturally, any finish manufacturer going in for these high class finishes spends plenty of time and money to test them for all conditions. However, a number of tests can be made in the refrigerator manufacturer's plant without much cost, especially tests on competitive materials submitted by different paint companies.

Water tests can be made with a small pan and some panels finished as per specification. Test the panels every few hours until they break down, marking them when the test started and at the breakdown point; then figure up the number of hours the test lasted until the final panel breaks down. The same procedure should be gone through with soft drinks, salt water, liquors, milk, butter and cooking oils. Time each panel as to the breakdown point by hours. This will prove to be an elimination contest, until finally one or two finishes appear that stand up above the rest.

The best time to make these tests is during the dull season. I am sure that manufacturers can avoid considerable trouble by basing their selection of materials upon these simple tests—and a lot of them will be surprised at the results they get.

Decorating with Screen Stencils

THE SILK SCREEN stencil method of applying color decorations has been used successfully for many years by manufacturers of a great variety of products, including finished surfaces of wood, metal, paper, fabric, rubber, leather, glass, celluloid and composition material.

The process is simple and rapid. For some types of work all that is needed is a silk screen stencil, a squeegee and a can of process paint. Materials can be obtained from manufacturers specializing in this class of supplies.

The user can make the silk

screen stencil or obtain it ready-made from a silk screen stencil manufacturer. In ordering a ready-made stencil, the customer submits a sketch, drawing or photograph of the design, trade mark or lettering he desires, and gives specifications as to its size—along with some information about the size, shape and surface of the product to receive the decoration.

The silk screen is stretched across and firmly attached to an open wood frame — like screen wire over a window screen frame. Suitable material is used to block out all areas around the design. If more than one color is to be used, an additional stencil must be made for each additional color. In other words, for three colors, three complete screen stencils are needed.

When the surface of the object to be stenciled can be placed in a horizontal position on a bench, the wooden frame of the stencil is usually hinged to the bench. For this work butt hinges with removable pins are used so that the screen frame can be quickly and easily removed for cleaning or for replacement by another stencil frame. This permits more rapid production and insures perfect registration of the different colors. If the product to be stenciled is large or bulky, the stencil may have to be portable so it can be held in position either by hand or by some suitable clamping device.

In multiple color work, each color is applied after the previous color has dried. Process colors that will dry in from 30 to 60 minutes are available, although some types of material require a longer drying period. Either flat drying or high gloss colors may be used. Flat colors are suitable for indoor display, or for outside exposure when coated with clear varnish or lacquer. Gloss enamel colors are suitable for exposure to the elements.

The usual procedure, when everything is in readiness, is as follows: A small quantity of process paint is poured in at one end of the frame; the stencil is positioned over the surface to be printed, and the operator moves the squeegee crosswise across the stencil to spread the paint and press it through the open mesh of the silk screen. One stroke is all that is necessary. When the silk screen plate is lifted, a sharp, clear and exact reproduction of the original design remains. This procedure is repeated upon each object on which the operator is printing.

The maximum number of impressions that can be obtained from a single silk screen stencil ranges from 5000 to 10,000. The rate of making impressions ranges from 200 to 300 per hour. Of course, speed of production depends largely upon the operator, the character of the stencil and the facilities available for getting work to and from the stencil operator's station.

When the silk screen stencil is not in use, all surplus paint should be removed and returned to the container, and the silk should be cleaned immediately. Cleaning is accomplished by washing the silk with a soft cloth saturated with turpentine, benzine, mineral spirits or some similar paint solvent. It is then set aside for future use.

Process paint is really not a paint but a printing ink. Several kinds of process paints are manufactured, each one being especially suited for a certain type of work. This is important.

Bleached Finishes

ON WOOD FIXTURES

BY F. R. BOYNTON
Foreman Finisher, Wiegel Cabt. Corp.

IN RECENT YEARS, or since the advent of modern furniture styling, bleached and blond finishes have become popular. I suppose every finisher has had his trials and tribulations in connection with producing satisfactory blond finishes. The first wood bleaches were home-made and are not to be compared with those excellent products that are available today.

Wood bleaching offers a real opportunity for manufacturers of furniture and fixtures. These concerns can use low priced veneers and solid woods to advantage in the manufacture of blond finished products. On competitive jobs they can often secure a contract that would be hard to get if the selected full-color veneers and woods were demanded.

Most woods of diversified colors can be bleached uniformally. Only one exception comes to mind, and that is oak. Oak that is grown on low wet ground will be much darker than oak that is grown on high dry land. When these two types of oak are bleached and then used together, a decided contrast will be noticed. Oak that is to be bleached should be selected for color as well as for grain figure. Mineral stains offer some difficulty in maple and birch, and repeated applications of bleach are frequently necessary to remove them.

Types of Bleaches

Several different bleaching compounds are on the market, and I believe they are all good when used properly. Of course, some will perform better on some types of wood than others. The single-application bleaches save time, and on some woods they are entirely satisfactory. However the 2-application bleaches are necessary on several kinds of wood.

Sometime ago a mistake was

A Modern Shirt & Hose Shop finished in bleached mahogany.

made by our finishers while bleaching some mahogany with a 2-application type of bleaching compound. The No. 2 solution was applied first. After an interval of five minutes the No. 1 solution was applied. It was at this time that the mistake was discovered. However, upon drying, the color was found to be whiter than the wood which had been bleached according to directions.

Water-glass (sodium silicate) is used in the formulation of some wood bleaches. When this bleaching material is used care must be taken in sanding the surface treated with it. All of the residue or scale must be removed from the wood; otherwise, after applying a tinted filler, the surface will become spotty. Special care must be taken to remove the scale from all corners and crevices, or you will have an unsightly appearance after the surface coatings are applied.

It must be remembered that in trying to rush production, serious damage may result if the wood surfaces are finished before the bleach is thoroughly dry. Rapid deterioration of the surface coatings will occur, due to the corrosive action of the bleaching solutions. Also, there will probably be more or less surface discoloration due to chemical action; in many instances the surface will turn green.

Application of Bleaches

Bleaches may be applied with a spray gun, a swab or a fiber brush. Workmen applying bleaches should wear rubber gloves to avoid being burned in case the solution comes in contact with their skin. If the bleach is sprayed on, better results will be obtained and a more positive action of the bleaching solution will occur if a fiber brush is used to rub the bleach into the pores of the wood. Ordinary bristle brushes will last only a few hours if used to apply the No. 2 solution.

Filling and Staining

A sizing or wash coat can be used to good advantage on bleached surfaces. Shellac or bleaching lacquer is preferable, as the filler will wipe off and clean much more easily. If the filler is tinted and applied directly to the surface without a wash coat, the soft woods will take up an excessive amount of color and may show a darker

shade than is desired. Then extra labor will be necessary to uniform the color. Amber and lighter-than-natural shade may be produced with filler alone—provided the filler is tinted to the desired tone.

When stain is used in conjunction with filler, I suggest spraying on a non-grain-raising type of stain. These stains may be reduced to any desired strength. The result is ease of application and color uniformity on the wood surfaces. A glazing stain may be applied, if necessary or desirable, to produce a certain tone or appearance. However, I have seen some finished furniture where the glazing had been overdone. The grain and figure of the wood was so obscured by glazes that the wood had the monotonous appearance of a painted wall.

Finishing Lacquers

It is not imperative to use water-white lacquers to coat surfaces that have been bleached or "blonded" to the lighter than natural colors—unless the shade is platinum or one of the white tones. The amber-colored surfaces will take on greater depth and will show more beauty if a regular sealer and finishing lacquer are used. A slight tinting of the lacquer will often "throw" a color that has been hard to match, due to discoloration of the surface coating that was used originally. Also, the corrosive action of the bleach (due to coating before the bleach solution was thoroughly dry) may change the tone, and the finishing lacquer may have to be tinted; it may be impossible to secure a satisfactory match any other way.

For the rubbed surface, a doublehead coat of sealer, sanded down with No. 4/0 sandpaper of 150 grit, followed by two coats of clear lacquer, should be sufficient—if enough drying time is allowed between coats. The tendency to follow one coat after another is bad practice, as the surface will not show the fullness of body that should be apparent. A longer drying time is necessary.

Rubbing a Bleached Finish

Bleached finishes look better with a rather high gloss. This may be obtained by sanding the surface smooth with wet-or-dry sandpaper and paraffin oil. After the surface is smooth, a carborundum rubbing compound can be used with paraffin oil. This will bring the surface close to a polished luster, with a rather high gloss for lacquer.

Modern styling has brought about many tones in the lighter-than-natural shades. Amber and honey-colored tones are among the most popular at present. Among these are the Harvest and Wheat tones on the Swedish Modern designs. With present day bleaches available, the variety of shades and tones are practically unlimited, and no doubt will lead to new and interesting things in the future.

Metal Finishing Book Free

An illustrated booklet of 20 pages 6x9-in., bound between heavy green covers and printed in black and red, describes "The Lea Method of Finishing"—the polishing and buffing of metals, plastics and other coated and non-coated surfaces. Six pages give detailed data and methods on typical case studies of extra fine finished products made of various metals, plastics and wood. Every concern that includes a polishing or buffing operation on its finished products should have a copy of this valuable booklet.

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DUOTONE
High in Decorative Appeal—
Low in Unit Finishing Cost!
• Glidden DUOTONE is a new one-coat baking metal finish producing a beautiful two-tone effect. It sprays freely, and has such solid covering that a perfect surface results on all gradings of metals.
Wherever used it increases sales value by enhancing consumer appeal, yet cuts costs substantially by its greater covering ability. Even foul oven conditions do not affect it.
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Everywhere on Everything

Modern finish manufacturers keep on file hundreds of labeled containers of samples of materials they have made up and sold to customers.

Those users who want to compare different shipments of the same goods, should keep samples of previous shipments and compare them with materials received later, making tests for viscosity, drying time, toughness, hardness, adhesion, smoothness and other characteristics that are really important.

Uniformity in Purchased Fin

WHILE IT is undoubtedly true that a user is entitled to service with a finishing material, surely it is encumbent on him to—to use a vulgar expression—"keep his nose clean" with regard to his end of the operations. I leave to the service men confirmation of how many calls, to "make this stuff work," result in valuable suggestions in regard to the care or use of equipment, or practices or conditions of application.

Lest this be received as a tirade against the consumer, let me emphasize the point that by a certain amount of routine control on the part of the receiver of the goods, any existing variation in the actual uniformity of the material can probably be recognized and adjusted by a system of mutual control, without placing the burden of proof on either individual concerned with the case.

There is certainly no good reason why the consumer should not take out and save—at least until the batch sampled has been used and another received and verified for similiarity—a retained sample, just as the manufacturer does in his control laboratory. A dozen pint or quart cans or bottles, with tight caps or lids, would involve no great expense, as they can be washed and reused repeatedly. Draw a sample from the new batch and check it carefully against at least one former batch before it is necessary to place the batch on the production line.

It might be a good plan to have about a dozen cans, and date them carefully, keeping them all full of retained sample. Then, when a new batch arrives, discard the oldest sample and remark the can for the new batch. In this way a dozen samples of as many different shipments of the same material will always be

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BY W. T. SMITH

Photo., courtesy of Lilly Varnish Co.

Finishing Materials—II

on hand for comparative check. A few simple tests will show whether or not the new material is consistent with that formerly received, and no variant or defective material need ever reach the spray room.

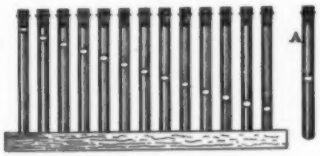
While the manufacturer will usually supply you with such pertinent statistics on your material as viscosity and total solids, and the basis on which he makes his control checks, unless you have similar equipment and are prepared to duplicate his results—and it's a wise chemist who can always duplicate even his own—it is better to set up standards of your own, based on your own particular conditions and practices.

Check Viscosity of Material

In clear and clear-pigmented lacquers and sealers, a most significant property is the viscosity. No matter what type of viscometer your supplier uses, a comparison with a known standard—in this case a sample of a batch which has already performed satisfactorily on your work—in a pair of bubble tubes is sufficient to determine the suitability of the sample in question for ordinary spray application.

Tubes for this purpose, known as Cargille tubes, can be obtained from any laboratory supply house. They are simply small glass tubes, like test tubes, but quite accurate in dimension and bearing two encircling score marks near the top. Fill one with the known standard material and another with that to be inspected, filling them to the lower scored line. Push the corks in to the upper line and you will have a uniform air space remaining in each. Hold the tubes in the hand for a few minutes to uniform their temperature. Hold them to-

gether in a vertical position and then invert them suddenly. The travel of the bubbles to the upper end of the tubes will show at once the relative viscosities. In

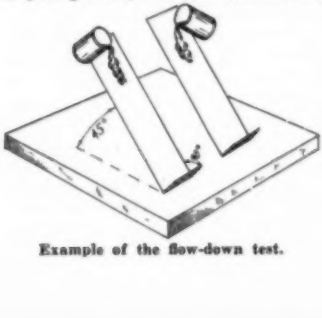


Glass tubes for testing viscosity.

general, it is perhaps safe to say that if one bubble does not reach the end of the tube more than it's own length ahead of the other, the viscosity of the two materials represented will not vary enough to cause a noticeable difference in the spraying. If one bubble is more than it's own length ahead, and persists in that behavior in repeated tests, you are probably justified in making a complaint.

A Flow-Down Test

A flow-down test of the material in question—always in comparison to the known standard—will often tell a great deal about the flow, drying and film property. Use a piece of clean window glass, or tinned sheet metal—or, if you prefer, a stained, filled, or



Example of the flow-down test.

otherwise prepared panel of the type of surface on which you will use the material. Support the panel at an angle of 45° to 60°, and pour exactly the same amount of each material down the surface, using a spoon or some such convenient measuring instrument. Observe the drying of the two flow-downs, the flow, or smoothness, of the surface; and, when dry, the toughness, adhesion, etc. This is also an opportune time to observe the possible presence of any articles, seediness or foreign matter, degree of luster and color.

These simple tests should be sufficient, for all ordinary purposes, to form a reasonably accurate picture of the suitability of the material you have just received. Keep a record of the batch, or the lot number of each receipt, which you will find on the end of the drum or on the label of the can, together with the date it was received. Such information is valuable in checking trouble or defective work, and incidentally in placing the responsibility.

In making these simple control tests and keeping the record and retained samples, you are doing about all that anyone, including the manufacturer, could do to insure the uniformity of the materials.

Be Particular About What Thinners You Use

It might be well to add a word about thinners and reducers and their possible effects on the materials. The thinner used in a coating material can have a direct effect on the film applied to the work, to the extent of altering the gloss, drying, viscosity, flow, blush, clarity, adhesion or

flexibility. Quite a heavy responsibility to place "in the lap" of a bargain thinner which may represent a saving of ten cents per gallon delivered.

It is not ordinarily apparent just what advantage is derived from purchasing a reducer from another source of supply, unless the reducer is a straight solvent of a commonly recognized type which is recommended by the manufacturer of the film-forming material. The manufacturer is the only one who knows exactly what is in his material and, therefore, the exact reducer necessary to obtain the best results from it. The fact that a reducer thins a material without precipitating the solid ingredients does not necessarily indicate that it will provide satisfactory workability or quality of film under all conditions.

It is possible, in some cases, to thin a lacquer as much as 50/50 with alcohol or toluol, without causing any apparent precipitation, but it is rarely that the supplier of the lacquer would recommend or sanction such procedure. It is important, for the reasons mentioned here, that the correct reducer be used if all the desirable normal properties built into the material are to be realized in it's use.

Briefly, the answer to the uniformity question is, after selection of an established reputable supplier follow his instructions as closely as possible. Control your local conditions of application and maintain your own standards in a manner comparable with those used by the manufacturer in order to provide a readily comparable cooperative double check on each shipment.

M. & W. Appoints A. W. Keller as Sales Representative

Maas & Waldstein Co., Newark, N. J., announces the appointment of A. W. Keller as a technical sales representative. Mr. Keller was formerly with Maas & Waldstein, having served as a sales representative for nine years. He has had wide experience in all phases of industrial finishing, and is well known to Eastern manufacturers, especially in the New York and New Jersey metropolitan areas.

Wood and Metal Finishes in New Star Catalog

The Star Chemical Co., 2533 Crawford Ave., Chicago, Ill., has just released a new catalog of wood and metal finish specialties for industrial use, the index showing materials that range alphabetically from Abrasives and Abrasol to Wood Stains. The book contains 45 pages 3⅝x8½-in. Its heavy paper cover is finished in a reproduction of blond mahogany, printed in blue and red.

De Vilbiss New York Office Moved to Better Location

The industrial division of The DeVilbiss Co. has moved its New York sales and service branch to 111 Eighth Ave. in the Port Authority Commerce Building. Improved transportation, trucking and parking facilities are available in this new location. Its greater accessibility will, company officials believe, make the service facilities offered by this branch more convenient to all.

Modern Finishing

If old Grand Pap, dead 50 years,
Should come to life again,
To gaze upon our brilliant colors
He'd think us moderns insane.

Such up to date facilities
We have to finish things,
The shock would send Pap back again
Where Gabriel plays and sings.

Paints, varnish, enamels and lacquers
With fancy names attached,
Are made to stay on anything,
No matter how they're patched.

Chemistry has enlightened the world
Made gorgeous colors "tops,"
Appliances for spraying paints
Have stopped the guy that slops.

—John R. Ritchie.

Chemically Resistant FINISHES FOR Laboratory Furniture

BY R. L. MASTERSON

THE FINISH on chemical laboratory furniture and equipment must have unusual durability to witstand the adverse conditions to which it is exposed. Not only must it be resistant to various chemical fumes that are characteristic of all chemical laboratories, but it must withstand actual contact with many of these chemicals in liquid form. Regardless of how careful the chemist may be, there are bound to be accidents in which strong acids, alkalies, solvents and other destructive agents are spilled or splashed onto the finish. Government departments and many private users of such equipment have, therefore, adopted specifications in which the chemical resistance of suitable materials are defined. One typical specification reads, in part, as follows:

"All exterior case and cabinet work shall be carefully stained and wiped to a uniform color with the best grade of oil stain, and then carefully filled with the best grade of paste wood filler, providing a uniform and smoothly filled surface to receive varnish coats. Stain shall be fully dried before application of filler, and filler shall be dried not less than 12 hours after application, before first varnish coat is applied.

"Two coats of high grade cabinet varnish undercoat shall be applied and each coat shall be carefully sanded and thoroughly dusted and cleaned before application of succeeding coat. A final coat of highly waterproof and chemical resistant eggshell gloss cabinet varnish shall next be applied.

"All finish coats shall be dried in a dustproof drying room at 90°F. in forced filtered air circulation for a period of not less than 18 hours between coats.

"All cabinet interiors, where covered by drawers or wood paneled doors, shall be finished to match exterior. All drawers shall have backs, sides and bottoms finished with two coats of pure white shallac, the first coat carefully sanded, dusted and cleaned before application of the second

coat. The backs of all cases and cabinets, where not exposed to view, shall be painted with one coat of high grade backing paint.

"The underside of all wood laboratory table tops shall be painted with one coat of aluminum paint, using an asphaltum vehicle having 1½ to 1¾ lbs. of aluminum bronze powder of standard grade per gallon of asphaltum vehicle.

"Shade or color of all exterior surfaces with the exception of table tops will be as selected by Architect. Exterior body finish shall meet the following minimum tests:

"A) Hot and cold water test. Finish shall withstand this test without showing any change whatever except for a slight dulling gloss. Test: Water duration 200 hours; second, boiling water duration 5 minutes (trickling on inclined surface).

"B) Acid test, without affecting the finish film. First, concentrated hydrochloric, no effect; second, concentrated sulphuric acid 77% for 30 minutes. Although the sulphuric might discolor the surface film, it must not destroy the film to such an extent that any marking cannot be removed with steelwool without affecting the stain finish underneath 24 hours after the application of the acid.

"C) Must stand 20% sodium hydroxide solution of 15 minutes without destroying the finish film.

"D) Organic solvents applied and left to evaporate must not turn the finish white and must not destroy the finish film. First, methyl alcohol 190 proof; ethyl alcohol, and glacial acetic acid.

"E) Must stand acetone and ethyl acetate applied on surface and left to evaporate without raising or lifting finish from surface.

"F) This finish must withstand the impact of a 1-lb. steel ball dropped on the surface from a height of 1-ft. without cracking or splintering.

"Bidders are to submit certified evidence that their exterior

finishes withstand the test herein outlined."

Quite a series of tests, don't you think? And yet, some of the private users require resistance to the following materials, in addition to those included in these specifications: Formaldehyde, saturated solution of phenol, hydrogen peroxide solution 3%, dilute nitric acid (2 to 1), dilute hydrochloric acid (2 to 1), dilute sulphuric acid (2 to 1), hydroflouric acid 45%, ether, butyl alcohol, amyl acetate, and benzine. Also, the finish is exptected to withstand a reasonable amount of heat, such as that which might be generated by a Bunsen burner standing adjacent to the finished surface, but with the flame not in actual contact with the finished surface.

Sounds almost impossible for a finish consisting of resins, oils, plasticizers, flatting agents and volatile thinners to ever develop enough resistance at the low temperature and within the short period of time specified, doesn't it? But there are finishes available that will meet all these conditions. One such material was recently tested and found to give the results shown in the accompanying table.

How can it be done? Only through the use of highly specialized synthetic resins, plasticized with exactly the right type and amount of plasticizer. Even then, the finish must be properly applied. The coats should be fairly thin and plenty of drying time should be allowed between coats. If applied too heavily, the material will not have good adhesion and it will remain soft over a long period of time. Where these conditions are recognized and provision is made for them it is not difficult to produce the desired finish.

The chemical-resistant varnish is high in solid content, but low in viscosity. It is obtainable in either an eggshell rubbed-effect luster, or in a high gloss finish.

Testing Material	Duration of Test	Result
Cold water	300 hours	Slight dulling
Hot water	100 hours	Slight dulling
Boiling water trickling over inclined surface	5 minutes	Slight dulling
Formaldehyde	1 hour	No effect
Phenol—saturated solution	1 hour	No effect
Hydrogen peroxide 3%	1 hour	No effect
Glacial acetic acid	30 minutes	Slight dulling
Dilute nitric acid (2 to 1)	30 minutes	No effect
Dilute hydrochloric acid (2 to 1)	30 minutes	No effect
Dilute sulphuric acid (2 to 1)	30 minutes	No effect
Concentrated sulphuric acid	15 minutes	Slight discoloration
Hydroflouric acid 45%	15 minutes	No effect
Sodium hydroxide 20%	15 minutes	Slight dulling
Ether	10 minutes	Slight dulling
Butyl alcohol	10 minutes	No effect
Amyl acetate	10 minutes	Slight dulling
Acetone	10 minutes	Slight dulling
Benzine	10 minutes	Slight dulling
Methyl alcohol 190 proof	10 minutes	No effect
Ethyl alcohol 190 proof	10 minutes	No effect
Ethyl acetate	10 minutes	Slight dulling
Impact test; 1-lb. from 1-ft. height		No cracking or splintering

On some of the above-mentioned tests, there may be a temporary slight softening of the film, but there is no permanent raising, lifting, or embrittlement of the film. The original properties of the film are restored within a short time after the test has been given in those instances where slight dulling or slight discoloration is noted.

HEATING EQUIPMENT FINISHERS—

SEND for this BOOK

BIG SWING TO NEW FINISHES for HEATING EQUIPMENT

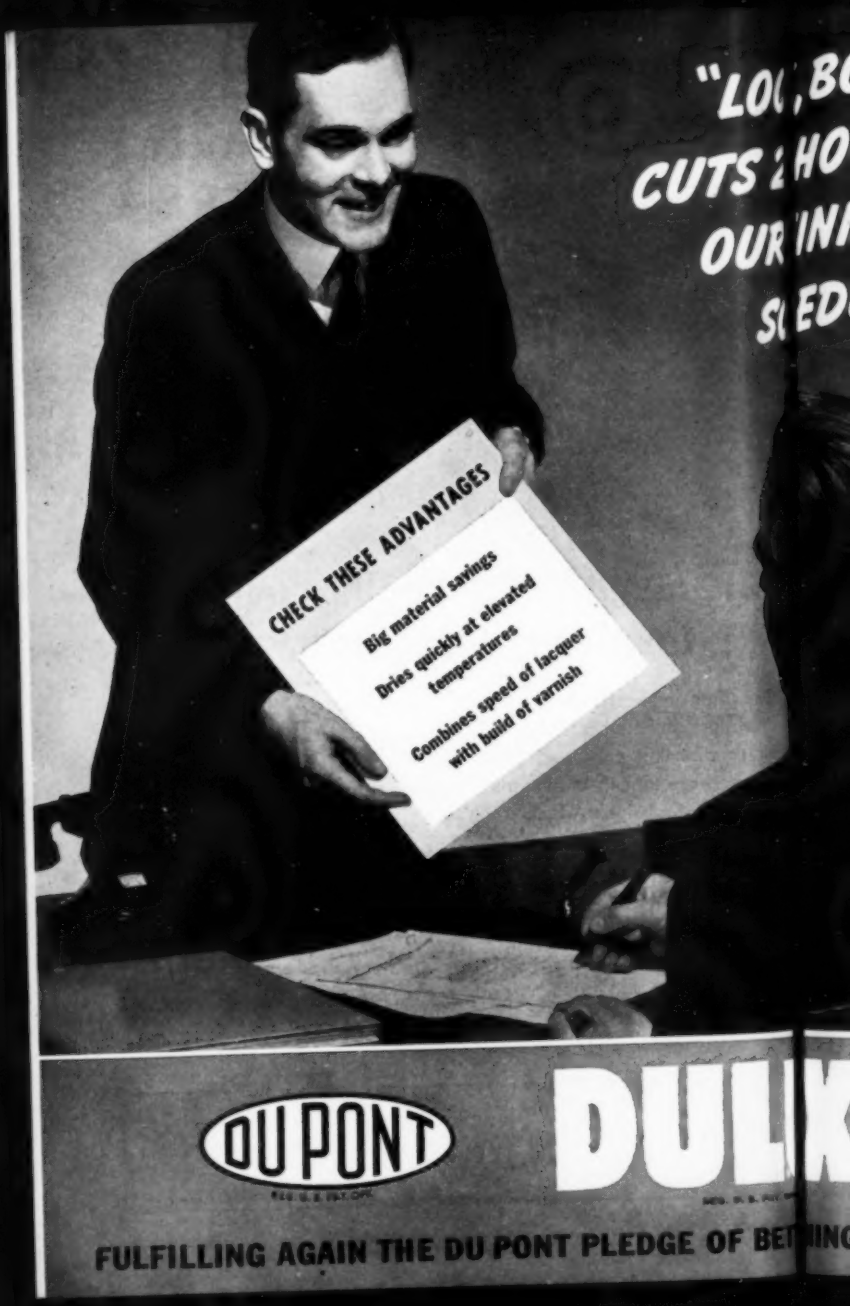
One after another, makers of heat circulators, stokers, water heaters, air conditioning units and allied products are turning to Multiform, the finish that looks, feels and cleans like porcelain.

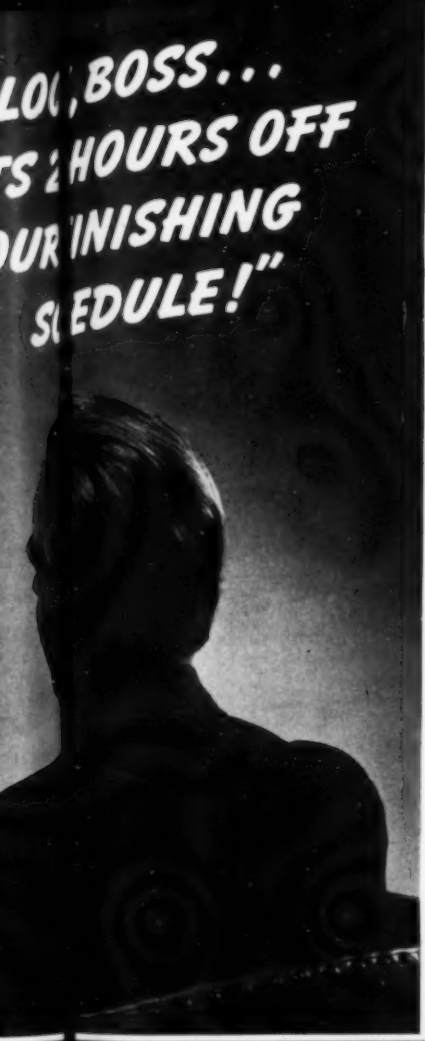
Multiform is a finish that *sells* a product. It's new—original—*two colors* instead of one. Multiform spotlights an article on the sales room floor. Products look finer and more costly and every woman can see at a glance that the glass-like surface of Multiform offers no harbor for dirt.

Yet, Multiform costs no more. Surface coverage equal to enamel, quick to apply, obscures metal marks, won't chip, heat resisting, may be recoated eliminating stripping. Production reject losses are negligible.

Write or wire for Multiform Color Book and Prices.

BERRY BROTHERS
Industrial Varnishes • Enamels • Lacquers
DETROIT, MICHIGAN WALKERVILLE, ONTARIO


"LOO, BO
CUTS 2 HO
OUR INI
SCED
CHECK THESE ADVANTAGES
Big material savings
Dries quickly at elevated temperatures
Combines speed of lacquer with build of varnish
DU PONT
DULK
FULFILLING AGAIN THE DU PONT PLEDGE OF BE



Du Pont announces a New DULUX finish for furniture . . . combines speed and quality of lacquer and flow and build of varnish . . . cuts finishing costs sensationally!

DULUX for furniture is a new and *different* finish. It is made to dry on an elevated temperature drying schedule of only a *few hours.* (2 hours at 150°). This fast drying, plus other qualities, offer you a *5½-7½ hour* finishing schedule from sealer to packer. Compare *this* with the 29-43 hour schedule for varnish, or the 22-28 hour schedule for lacquer!

DULUX has a clear, bright film with excellent depth of appearance. Its unusual build means that you need apply only *one* coat, instead of the two coats usually required by varnish and lacquer. Material savings up to 30% are possible. DULUX also saves time because it is easy to rub.

DULUX has excellent print and water resistance, as well as resistance to alcohol, marring and scratching and cold cracking.

Investigate this remarkable new production-speeding finish! For full information, just write to E. I. du Pont de Nemours & Co., Inc., Finishes Div., Wilmington, Del. Canada: Canadian Industries, Ltd., Toronto. Great Britain: Nobel Chemical Finishes, London.

Visit the Du Pont "Wonder World of Chemistry" exhibits at the New York World's Fair and the Golden Gate International Exposition

LUX FOR FURNITURE

F BETTINGS FOR BETTER LIVING THROUGH CHEMISTRY

SECURE *Greater Value* WITH DAY'S LACQUER AND SEALER

Day's Lacquer and Sealer have a well deserved reputation for good value, economy in application, attractive appearance and durability.

This reputation is not accidental. It is built on the experience of users who find that Day's Lacquers and Sealers produce the results for which they were formulated.

Whether your requirements are primarily for high quality or low cost, you will find that Day's Lacquers and Sealers produce the finest results with the greatest economy.

Information regarding your requirements will bring a prescription for Lacquer and Sealer that will stand up on your product. No obligation. Write today.

JAMES B. DAY & CO.
• CHICAGO •

Kindly mention INDUSTRIAL FINISHING when writing advertisers

Greater chemical resistance will be obtained if two or more coats are used, instead of only one coat over a cabinet undercoat varnish, as specified here.

Some users buy only the gloss material and make the eggshell material themselves by mixing a special flatting base with the gloss varnish. This eliminates any danger of settling of the flatting agent in the package and makes it possible to produce a variety of lusters, from full gloss to flat, according to the amount of flatting base added, without carrying more than one varnish in stock. The varnish is usually applied by spraying, but it can be brushed.

Next month this article will be concluded with some valuable information regarding the use of chemical resistant enamels on the bases and sides of laboratory furniture, as well as detailed instructions for securing a jet black chemical resistant finish on wooden and fiber table tops.

New Wrinkle Finishes Are Beautiful and Durable

It is now possible to obtain brilliant and beautiful effects in wrinkle finishes, said Mr. G. Klinkenstein in speaking before the annual meeting of the Milwaukee Branch of the American Electro-Platers' Society on the subject of "Making Wrinkle Finishes More Attractive."

Mr. Klinkenstein, who is Vice President and Technical Director of Maas & Waldstein Co., Newark, N. J., pointed out that until recently wrinkle finishes were obtained only in dark colors, but new developments have removed this limitation.

"Wrinkle finishes are now obtainable in all colors," said Mr. Klinkenstein, "including pure white, brilliant light colors of all kinds, and soft pastel shades. These single-colored wrinkles are finding wide use in finishing products of many kinds, but, in addition, they can be made even more attractive by the addition of metal powders or by spraying over the base coat of wrinkle a second coat of lacquer enamel of any desired color."

These new finishes are applicable to surfaces of any kind, dry quickly out of dust, and bake at relatively low temperatures, the speaker said. They are of lower viscosity than the older type and, hence, spray easily and give fine uniform patterns that can be varied over a wide range of textures at the will of the operator. One coat gives complete coverage on even rough metal surfaces.

Building Maintenance Hand Book Free

An illustrated book covering practically every phase of building maintenance (56 pages, 6x9-in. inside the covers) has just been published by the Flexrock Co., 2301 Manning St., Philadelphia, Pa. Alphabetically, the index includes everything from "Analysis of Roof Coating" to "Wood Floor Preservative." It should be in the reference files of every industrial concern. Copies are free to companies or individuals who write on their firm's letterhead and give the title of the individual signing the letter.

The front of this new filling station in Australia is done in porcelain enamel, the base metal being Armco enameling iron. The color scheme is ivory with black trim and red lettering. Metters Ltd., Sidney, designers and builders.

Causes of Finish Failure

AS APPLIED ESPECIALLY TO METAL FINISHING

BY E. A. ZAHN
Works Laboratory, General Electric Co.

THERE ARE many natural enemies to a real finish. The worst one—the one that is hardest to fight—is the "Time Limit" allowed for the most important and most visible part of the product. Time, so far as the finish is concerned, is something that is like a golden opportunity—an opportunity to make or break further sales of the product. The Time Limit problem never will be solved by laboratories and paint material formulators, for when they make a material that requires only half the previous application time, then management steps up and demands even more speed. It is up to those who can see the real value in the finish to demand that the necessary full time be allowed so they can do the right kind of job.

The time limit is generally set before a job is started. Then, in order to correct any blunders, accidents, or errors that have been made at other stations along the production line, the finisher is robbed of the time necessary to do the job properly. Result: An inferior finish (for protection) throughout its life, to say nothing of its poor appearance. We must not forget that the customer is waiting to see his new purchase, and all he can possibly see is the finish.

Enemies of a good finish include time-limit schedules, unsuitable materials, poor housekeeping, unfiltered air, inadequate surface preparation, indifferent workmen, rust creepage under paint films, slighted undercoats and excessive cost cutting in production work.

★

Exaggerated Claims

Another enemy of finish is the paint material salesman who always claims to have the "perfect material," regardless of what the problem is. Fortunately, reliable paint manufacturers will not permit their representatives to misrepresent their products. However, the salesman is here to sell. Few salesmen will admit that their product is not good enough for the job.

Another point: The formulator's first attempt on a special

EGYPTIAN
ZINC CHROMATE PRIMER

- **An excellent rust-inhibiting undercoat.**
- **Dries rapidly at room temperature to take lacquer, High Bake N-F-R, and varnish finishing coats.**
- **Can be used in multi-coat single bake systems, saving costs, time, and baking operations.**
- **For exterior or interior use.**

These and many other advantages are to be derived from the use of Egyptian Zinc Chromate Primer. We will welcome an opportunity to tell you more about this new undercoat and to discuss with you how it will best suit your individual need.

EGYPTIAN FINISHES

THE EGYPTIAN LACQUER MFG. COMPANY

ROCKEFELLER CENTER, NEW YORK

material is not always the final answer.

These remarks do not apply to the majority of salesmen; they have come to realize that every finishing job is a problem to be solved in exactly the right way in order to sell the next order.

Dirty Room; Dirty Finish

Poor housekeeping is another common enemy of finish that exists in a surprising number of places. Compelling a finisher to do his work in dirty surroundings is like telling the customer that you do not care whether or not he buys your products. Look at the place that you give your painters for a finishing room. Then ask yourself if it is a fit place to do the most important part of your manufacturing. It is definitely poor practice to sacrifice durability of finish for appearance, but it would be even more ridiculous to sacrifice appearance for durability.

Dirt, which is so often found imbedded in the finish, actually belongs in a paint strainer. Little paint strainers can be purchased for less than one cent each; they should be a part of the regular equipment in every shop. Specks of dirt show poor judgment; they do not distinguish between a good quality material and a poor one; they adhere equally well to either.

High speed drying might be of some help in order to cut down the amount of dirt collected on the surface. However, let us not go too far with our speed, lest we sacrifice the all-important features. Paint strainers are not the only means by which paint materials can be kept clean. There are several different makes of excellent filters that can be attached to any compressed air painting equipment. And there are air-conditioned finishing rooms to which only filtered air is admitted. The operator can be the best filter by not permitting his paint materials to become dirty.

Inadequate Surface Preparation

One of the more powerful enemies to a good finish is careless or inadequate surface preparation. One little speck of dirt, which is practically invisible on the otherwise clean surface, is often magnified through several coats of finishing material. Here again, the operator must have time to find and remove these causes of poor finish appearance. Double priming is a possible remedy for many of these underlying troubles. One prime coat can be applied when the part is originally clean; the other, after assembly, before finishing. This double priming provides enough working material for sanding, etc., and it also takes care of assembly damages which otherwise, are hard to repair.

From the appearance of a touch-up spot, if it were alive, it should be court-martialed and shot; it adds an insult to an otherwise perfect finish. There is a difference between a product having a touch-up spot in some obscure place, and one that looks as though it had been stippled with the same paint as was used to finish the product originally. Too many times, an operator is told to touch up the spots, when a complete all-over coat would take hardly any more time. It means the difference between satisfaction and a complaint, and it

Correct Flexibility of
SCOTCH MASKING TAPE
(Pressure Sensitive — Seals Without Moistening)
makes it possible to give masked protection to odd shaped and sharply curved areas before spraying. Properly developed adhesive prevents the tape from lifting under spray pressure and keen sharp edges result.
Easily applied, it is equally as easy to remove without leaving residue.
If you are not already using Scotch Masking Tape, send for a sample roll and try it on your next masking job.
Made and Patented in U. S. A. by
MINNESOTA MINING & MFG. COMPANY
SAINT PAUL
MINNESOTA
The Desire To Serve
The Ability To Produce

Canadian Manufacturers and Distributors, CANADIAN-DUREX ABRASIVES, LTD., 154 Pearl St., Toronto, Can.

will probably affect future sales.

The Indifferent Workman

The man who just "puts paint onto something or other" for a living, is a nuisance and an enemy of a quality finish, whether intentional or otherwise. There are several kinds of operators, such as men who put on paint, men who paint, and men who do finishing; but best of all is the man who is a finisher because he has mastered the art of making something beautiful through the medium of paint. While there are not many such men, it is possible to show others the light by helping them create greater interest in their important work. Give them time to do decent work, along with respectable equipment and paint materials. The real difference between two men is that "one can make it" and "the other can break it," while they both use the same materials and follow the same instructions.

In some plants, finishing has come to be looked upon as camouflaging—not because the manufacturer intentionally wants to camouflage his product, but because he doesn't always realize the high value of a good appearance. How can such a concern expect their painters to display any greater interest in the work? After the painter does a day's painting in the shop he may go home and wax his car until it looks like new. We wonder if he ever gave a thought as to what his shop work (which he is paid for) would look like if he took as much care with it.

Rust Creepage

Another of the serious enemies of finish is rust or rust creepage after finishing. Every precaution should be taken to remove all traces of rust, as well as to guard against its formation under the paint. It is not too difficult to find a suitable place somewhere along the line of operations to clean and prime coat the parts before assembly, provided suitable materials are available. Often it is extremely difficult to apply protective undercoats after assembly; such practice is one of the best invitations that rust ever had. If one has never seen the real damage that can come from rust creepage, it is difficult to imagine to what extent hidden rust will travel. A small rust spot under the prime coat is bound to grow.

If the painting problem is confined to castings, then the proper place for priming is at the foundry, before transportation. It is common practice to blast-clean castings at the foundry, so why not apply the primer at that point? The foundry priming idea is now widespread. We see this as an economical measure of safety.

Slighted Undercoats

A common enemy of finish is carelessness in undercoat application. These undercoats are just as important as the final coats. They make it possible for the finishing material to look its best, and on them also rests the responsibility of keeping the finish good looking. The final finish is only skin deep, while the undercoats are the real flesh and life of the system. Undercoats must combine the necessary flexibility and adhesion to the underlying surface. Without flexibility, the finish could not take the abuse

which is bound to come in service; and without adhesion, there would be complete failure. Often we hear, "It's only the first coat," but it is more than just that. It is actually the base and quality of the entire finishing system. These undercoats are put there for a definite reason.

The reason is that it is decidedly safer to build the finish in steps rather than to try to combine adhesion, flexibility and beauty all in one material. There are some good one-coat finishing materials, but they should be confined to their proper places. The finer things like automobiles, refrigerators, etc., cannot risk the possible failures of a one-coat finishing system.

Excessive Cost Cutting

Striving to cut the cost of production finishing is desirable for competitive reasons; but if the rate of cut, on a normal production application, exceeds the rest of the developments, it can be a serious enemy of the finish and of future sales.

Those of us, upon whom rests the responsibility of low-cost finishing, should take into consideration the fact that appearance and durability cannot be sacrificed. We should confine our activities to material-cost reduction and application-cost reduction, but never to the extent that we forget the finish sells the product. We can go in for automatic application in place of hand work, and we can assist the paint material manufacturer in many ways to reduce the material cost.

One of the difficulties in application-cost reduction is that workmen soon become conscious of the fact that there is becoming less necessity for hand labor. Since every story has two sides, let us look at the other side of this argument. If a manufacturer is to remain in a satisfactory competitive position, he must resort to these changes; failure to do so would put him out of business. According to this arrangement, isn't it better for the workman to cooperate in reducing application costs, in order to stimulate the sale of products of his labor?

A serious enemy of finish is reciprocal buying of finishing materials without due consideration to material quality and purchase prices. Some large manufacturers have foreseen these difficulties and have set up air-tight specifications and testing systems which definitely give each vendor an equal opportunity. They have isolated the testing division from the material standardization division. The latter, then, can work directly with the purchasing section. The standardization department can request all material samples through the purchasing division. Upon receipt of these samples, labels are removed and a code number is assigned to each container of material before it is turned over to the testing department. After the tests are completed, if it so happens that two materials are equally rated, then reciprocity can be considered in favor of a certain manufacturer.

Head and Eye Protection

A 48-page booklet (page size 8¼x11-in.) prepared and published by Chicago Eye Shield Co., 2300 Warren Blvd., Chicago, Ill., describes and illustrates a large variety of protective devices for workmen, including several types of paint-spray respirators. Goggles, dust hoods and face shields of many kinds are shown.

BAKING COST

Production Increased With New S-W Kem APPLIANCE White Mono-Bake System

Two Coats—Primer and Enamel—*One* Bake

Sherwin-Williams announces another achievement for the product finishing trade. The Mono-Bake System air-dries the primer 15 minutes, applies the enamel and bakes both in one operation to give HARDNESS, TOUGHNESS and other film characteristics fully equal to standard two-bake systems!

Schedules for the single baking operation of the new Kem Appliance White Mono-Bake System are: 15 minutes at 350°F. or 30 minutes at 300°F.

The product finisher gains these advantages: 1. Lower cost of baking; 2. Savings in handling; 3. Production speeded up; 4. Better adhesion between coats through closer amalgamation of primer and enamel; 5. Film characteristics same as conventional two-bake systems.

Kem Appliance Flash Bake Primers

Bake up to six times as fast as old type primers.

Quick air-dry for Mono-Bake System—baking time up to six times the speed of primers formerly offered. No sacrifice in quality or characteristics were made to gain this speed. Baking at lower temperatures is permitted when desired with time still cut in half as compared with older materials.

Because of their speed and the worthwhile economies in both time and fuel, product finishers will welcome these new Flash Bake Primers.

CUT IN HALF!

Resists Color Change

S-W Kem Appliance Heat Resistant White

Formulated particularly to resist color change when used on surfaces subject to elevated operating temperatures, Kem Appliance Heat Resistant White Enamel offers many interesting possibilities to manufacturers of stoves, heaters, clothes driers, and similar appliances. Baking schedules are: 25 minutes at 300° F.; 15 minutes at 350° F.

For Fast Low Bake

Kem Appliance Low Bake Enamel

Where service requirements and baking equipment call for an enamel capable of baking at lower temperatures, Kem Appliance Low Bake Enamel makes possible speeds formerly obtainable only in high baking enamels.

Alternate baking schedules are: 15 minutes at 250° F. or 60 minutes at 200° F. It may be force-dried as low as 175° F. for two hours.

It Air Dries—New Kem Appliance Air Dry White

A true Kem Appliance Enamel, formulated to air dry. It has been designed for cabinets, metal furniture, hot water heaters, stove legs, vending machines, and scores of similar products.

Drying is fast:

1. To Touch—10 to 15 minutes.
2. To Handle—1 to 2 hours.
3. To Pack—Overnight.

In color retention, mar-resistance and alkali-resistance, Kem Appliance Air Dry White is tops for an air dry finish. Compares favorably with many baking enamels in use today.

SHERWIN-WILLIAMS INDUSTRIAL FINISHES

FREE! Please send me without cost or obligation, my copy of the technical report on the S-W Kem Appliance White Enamels.

PRODUCT FINISHES HEADQUARTERS,
THE SHERWIN-WILLIAMS CO., CLEVELAND, OHIO

NAME_____

FIRM_____

STREET_____

CITY AND STATE_____

Automatic Sprayer

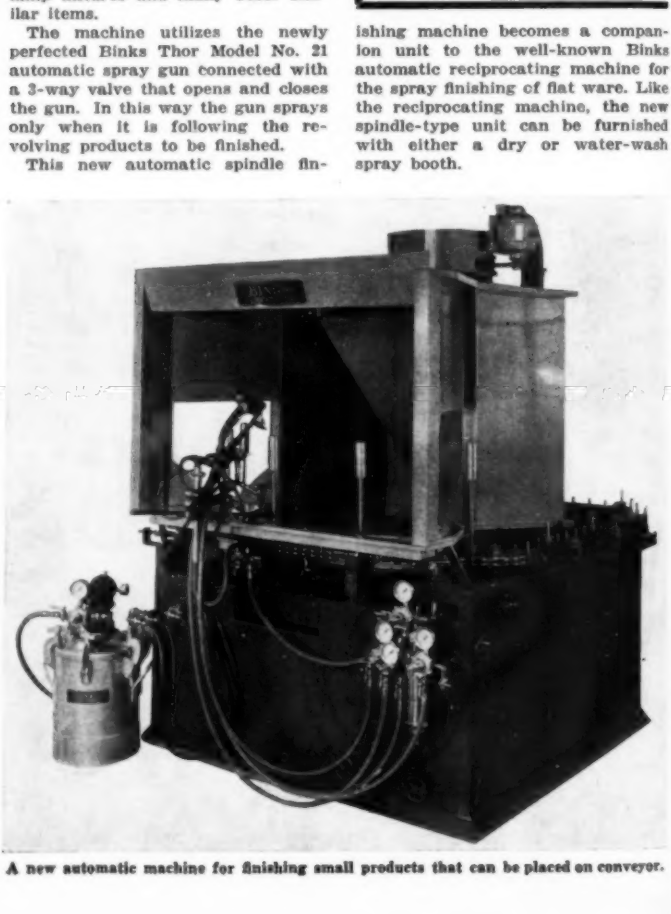
A new standard spindle-type automatic spraying machine is being introduced by the Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill. The new machine is so designed that it is readily adaptable to all types of automatic spray finishing for clocks, battery boxes, golf balls, insulators, lamp fixtures and many other similar items.

The machine utilizes the newly perfected Binks Thor Model No. 21 automatic spray gun connected with a 3-way valve that opens and closes the gun. In this way the gun sprays only when it is following the revolving products to be finished.

This new automatic spindle finishing machine becomes a companion unit to the well-known Binks automatic reciprocating machine for the spray finishing of flat ware. Like the reciprocating machine, the new spindle-type unit can be furnished with either a dry or water-wash spray booth.

New...

MATERIALS
SUPPLIES
EQUIPMENT



A new automatic machine for finishing small products that can be placed on conveyor.

"Franzite"—Synthetic Enamel

"Franzite" is a new fast air-drying 100% synthetic enamel recently released by Hilo Varnish Corp., 42 Stewart Ave., Brooklyn, N. Y. It is specially formulated to give good hiding and high gloss in one coat, and dry hard overnight; sets in 20 minutes and dries to touch in 45 minutes; may be force-dried by a 20-minute bake at 150°F. Franzite is elastic and has good adhesion to wood, steel and similar surfaces. Comes in colors and black, white and clear. Samples are available upon request.

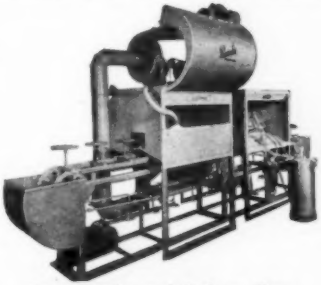
Flock Coating 11,000 Discs Daily

An automatic spray finishing machine for spraying binder and flock on flat metal discs has recently been developed and installed for a customer by Paasche Airbrush Co., 1911 Diversey Parkway, Chicago, Ill. The complete unit includes a conveyor 16-ft. 9-in. long, 4-ft. wide and 3-ft. 6-in. high, with roller chain on ball-bearing steel sprockets, and 28 rotating spindle assemblies.

The metal discs are loaded manually; as they pass through the first coating station they receive a uniform application of adhesive. The metal discs next enter the flocking station where they are again rotated while flock is applied by means of a continuous flow nozzle. The flock is placed in a hamper at the rear, which is equipped with a variable speed motor-driven screw that feeds only as much flock as is required through the flock distributing unit. All excess flock or overspray is picked up by this same flock distributing unit, recirculated and used over and over again, so there is practically no waste of material.

The amount of flock to be applied to the discs is accurately controlled and a uniform application is assured. The conveyor is equipped with explosion-proof electric motor drive with speed reducer and varispeed pulley to effect speeds that will permit coating from 5 to 25 pieces per minute.

The overall height of the unit is 7-ft. 6-in. The maximum diameter of the flat discs is 10-in. Daily production of 10-in. diameter discs is



Sprays binder and flock on discs.

11,000. The unit includes two automatic airbrushes, a 12-gallon "clamptight-cover" pressure-feed material tank, airconditioning unit, special flocking and reclaiming booth with material hopper and agitator, and ventilating unit for the complete outfit.

Materials used, based on a production of 23 pieces per minute, are as follows:

Flock used..... .6 dram for each disc
Binder used.....6.6 dram for each disc

Liquid Auto Polish

An improved formula that will make its liquid auto polish suitable for all types of car finishes—old and new—including the modern metallics, is announced by E. I. du Pont de Nemours & Co. This new formula for a well known polish is the climax in a series of developments begun 14 years ago.

With the introduction of pyroxylin

finishes and their wide use on automobiles, polish was developed by the Du Pont Co. in 1925 to be applied on that type of finish. As pyroxylin finishes were improved, necessary changes in the formula of the polish were made. Then, with the introduction of synthetic resin finishes about 1934, more changes were made in the polish so that it would function with equal efficiency on all finishes then existing.

The latest improvement in this liquid polish not only makes it applicable to all present-day car finishes, but it is proof against variable weather conditions, performing equally well in excessive damp and in high and dry climates. It removes dirt and traffic film and entails less labor in application than did former polishes.

Fire Extinguisher

New and improved C-O-Two Baffle type nozzles, providing a non-turbulent distribution of gas from C-O-Two carbon-dioxide fire-extinguishing systems have been developed by the C-O-Two Fire Equipment Co., 560 Belmont Ave., Newark, N. J. These new nozzles reduce the velocity and pressure of the discharge and permit rapid expansion and non-violent penetration of the gas throughout the entire protected area. They are compact and do not require a protruding horn or metal enclosure which might become damaged or knocked off.

Illustration of new nozzle.

Removes Moisture From Compressed Air

"Aero-Dehydrator" is the name of a device developed and now offered by M. & E. Mfg. Co., 720 S. Meridian St., Indianapolis, Ind., for dehydrating or removing excessive moisture from compressed air lines coming from the air compressor.

Cools and dehydrates compressed air.

It is common knowledge among finishers that excessive moisture in the compressed air used for spraying is definitely harmful to the finish. With humidity at a high point, as it is during many months of the year, often as much as a pound of water is entrained in the compressed air in the form of super-heated vapor to each 1000-cu.ft. of air taken in by the compressor.

Where the consumption of air amounts to 125-cu.ft. per minute, approximately one gallon of water must find its way out of the lines every hour. Unless some practical means is adopted for its removal, it

Thousands of stoves and ranges made in the United States

are finished with

LILLY'S HI-BAKE SYNTHETIC ENAMELS

for
BEAUTY
DURABILITY
ECONOMY
try them

Lilly Varnish Company

666 South California Street, Indianapolis, Indiana

Branches: Chicago, Ill.; Grand Rapids, Mich.; Gardner, Mass.

The LILLY COMPANY, High Point, N. C.

Great Britain and Europe: Apply Jenson & Nicholson Laboratories, Stratford, London, England.

can only escape through the spray guns.

The Aero-Dehydrator is capable of reducing the percentage of water in the air lines 85% to 90%, using water as a coolant through the dehydrator, and as much as 90% to 95% with an electric water-chilling attachment. This moisture is automatically removed and discharged to the sewer.

"Baking Platelustre"

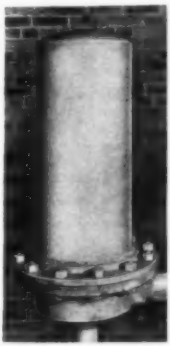
A new baking enamel that reproduces the colors of many metals has been developed by Maas & Waldstein Co., Newark, N. J. With this new enamel, which is known as "Baking Platelustre," any polished metal can be made to resemble brass, chemically-treated aluminum and steel, and other colored metals, according to the manufacturer. When baked it is very durable and will resist the action of cleaning operations and also plating baths so that, when applied sectionally, a wide variety of effects is made possible. Flat stock finished with this enamel can be formed after baking. Two-color finishes can be obtained by "relieving" operations.

Baking Platelustre can be applied to any kind of polished metal by spraying or roller coating. It is especially suitable for compacts, novelties, lighting fixtures, and other products where a brilliantly colored metallic finish is wanted.

Adsorbs Odors

A new odor adsorber for removing all types of odors such as oil vapors, fermentation vapors and other objectionable gases from compressed-air lines is announced by W. B. Connor Engineering Corp., Dorex Air Conditioning Division, 114 East 32nd St., New York, N. Y.

Known as the Dorex Pipe Line Adsorber, the unit is an auxiliary airstream filter of activated coconut-shell carbon. This type of carbon



The unit shown has a compressed air capacity of 175-cfm.

is one of the most active commercial adsorption agents known, and will adsorb odors up to 15 to 20% of its own weight. It is reported to remove odors and vapors that cannot be stopped by the usual condensers, separators or aftercoolers.

TOO LATE TO CLASSIFY

POSITION WANTED

By finishing foreman and finisher experienced in all kinds of finishes on WOODS and METALS, air drying and baking; handle any number of men; latest methods of production; chemical experience of materials. Best reference as to character, mechanical, executive abilities. Salary open. Will go anywhere. Address IF-751, care Industrial Finishing, Indianapolis.

CHEMIST FORMULATOR WANTED.

Large Mid-Western Paint Manufacturer has opening in their Industrial Finish Division for a technical man who has had broad experience in formulating white synthetic enamels, and who is well versed in U. F. and alkyd resins. This is an important position and offers a real opportunity for advancement. Will consider giving right men charge of our industrial finish laboratory. State age, previous employment and salary received. Address IF-752, care Industrial Finishing, Indianapolis.

DEMAND TO KNOW

what these great production-tested finishes will do for you! Drop us a line—describe your finishing problem—if one of our products will really benefit you, we'll send full information.

★ M. V. L. SEALER WITH M. V. L. FINISH

—A Unique Combination that

Dries with the speed of Lacquer— ***Looks like Varnish—***
Feels Like Varnish— ***Builds like Varnish—***

Made in: Gloss, Semi-Gloss, Hi-Sheen, Medium Flat and Flat

★ MAR-VEL-FILM FINISHES

—Production-Proven Superior for

Quickness of Drying ***Depth of Film*** ***Hardness of Film*** ***Elasticity***

★ KWIK KOTING PIGMENT STAINS

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Like Chromium Plate

The latest addition to Hommels complete line of aluminum, gold and copper bronze powders is an ultra-fine powder which will, when used with the proper liquid, produce a finish closely resembling chromium plating; it has extreme covering capacity, and is economical in use. Samples furnished on request, by The O. Hommel Co., 200 W. 34th St., Pittsburgh, Pa.

Wood Lacquer and Sanding Sealer

The Rudd Lacquer & Sealer Corp. (Rahway, N. J., and New York, N. Y.) announces two new concentrated Noroy products — Concentrated W-1035 Clear Gloss Wood Lacquer, which has a solid content of more than 52%, and Concentrated S-1230 Lacquer Sanding Sealer, with a solid content of more than 35%. Both products may be reduced to any desired percentage of total solids at the gun. They can be thinned down to practically any percentage of solid contents desired so as to apply the exact depth of film required for each particular purpose.

The announcement further states that the economy and adaptability of this Concentrated Lacquer and Lacquer Sanding Sealer has caused considerable interest among furniture manufacturers who are interested in new developments.

Stops Shrinkage and Swelling of Wood

A material for treating raw wood (lumber or machined wood parts) to prevent any swelling, shrinkage or checking due to absorption or loss of moisture, is announced by The Schaefer Varnish Co., Inc., 15th & Magnolia Sts., Louisville, Ky.

This new and remarkable material is called "Escolox WDC" (Wood Dimension Control). It is non-toxic

and can be applied by brushing, spraying or dipping.

Escolox WDC is not a sealer but penetrates completely into the wood without closing the pores—a simple surface application, under no pressure or vacuum, is all that is required to make the wood fibers moisture repellant. It produces no discoloration of the wood or offensive odor. Lumber treated by the Escolox WDC process may be glued and finished with stains, varnishes, lacquers, enamels or paints after machining and final sanding.

One application is enough for 1-in. stock, but heavier lumber should remain in the dipping bath for about 5 minutes for each 1-in. of thickness. If the material is being brushed or sprayed, an additional application should be made at 30-minute intervals for each 1-in. of thickness.

After application, allow at least 24 hours for each 1-in. of thickness for the treatment to become effective by complete penetration and impregnation of wood fibers which will thereafter resist extremes of temperature and humidity.

"Rustgard"

Rustgard is a transparent composition designed to form a fine-grained film over polished metal surfaces to guard them against rusting. It is not easily detected. It can be had in different types, with varying qualities as to resistance to abrasion. The thin film of Rustgard forms an excellent foundation for various paints, and is particularly adaptable where metal sheets are warehoused or where rust may occur during shipment.

It does not affect the metal surface, and can be readily removed, if desired, by mild solvents.

Rustgard, once set, is not a dirt or dust collector; it is barrier against the five evils: Water, humidity, oxidation, and acid fumes; a product of Drigard Products Corp., 379 7th Ave., New York, N. Y.

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RAYON

will add the finish that attracts attention to any article — and makes it sell.

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COMPACTS
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— for the best results use the best Flocks made.

Write for Samples.

CLAREMONT WASTE MFG. CO.
CLAREMONT, N. H.

The country's largest manufacturers

Bake-Finishing Refrigerators

The enameling section of our plant is devoted to low and high-bake synthetic enamels. We have experienced much difficulty in the past, due to dust and a badly air-circulated oven. These drawbacks have been partly overcome and now we turn out a reasonably good job.

One client requires an odorless synthetic high-bake enamel finish for refrigerator carcases (inside compartments). We have sprayed and baked a hundred or so. The gloss, hardness and general appearance have been all that was required, but on assembling there is a distinct odor, being far from pleasant, after the refrigerator has been closed for some hours. We are using —— hi-bake enamel, baking the primer and first coat at 320°F. for one hour, and the second coat at 260°F.

Could you suggest any ways or means of overcoming this drawback?—N. E. & Co., Australia.

This problem is one that bothered us in years past. We also use —— hi-bake synthetic enamel, but we use a slightly different baking schedule from that used by N. E. & E. Co. It is as follows:

Primer is baked at 385°F. from 50 minutes to one hour, generally one hour. Finish coat is baked at 260°F. from one hour and 40 minutes to two hours, generally about an hour and 50 minutes.

Our refrigerators were built on a lumber frame. In the case proper, we used yellow pine posts and cross members, except on the front where we used white pine cross members. The door frames

Questions Answers

were made entirely of white pine.

One year we used a sanding sealer on the frame but found that this sealer gave a disagreeable odor to the refrigerators. We left off the sealer and had no more trouble that season.

We have had trouble at times from rosin and pitch baking out of the refrigerator frames when the case was going through the baking oven. This gave a piney or turpentine odor to the refrigerator interior. We eliminated this by selecting our pine a little more carefully, eliminating that which was rich in rosin.

Another season we used door hard maple facing strips which were stained and enameled black. That season we ran into real trouble from odor in the case interior, after the case had been crated for a time. This trouble was overcome by changing our source of supply on the black-facing-strip enamel. The enamel from the second supplier entirely eliminated this trouble, and we have had no trouble from odors since that time.

Another possible source of trouble would be the insulation. Sometimes cork gives off an unpleasant odor if it happens to be overheated in the pressing or board-forming process. Flax blanket becomes musty and sometimes gives off an unpleasant odor. Also, saturated asphalt paper may be a source of trouble

if purchased from a supplier who might use an adulterated asphalt. Years ago we had a door gasket that gave off a disagreeable odor, but since going to a high-grade extruded rubber gasket, we have had no trouble from that source.

We have been using Celotex, Temlock, and Owen Corning's fiber glass insulation for the past few seasons and have experienced no trouble from insulation odor. This summarizes our experience along this line.

We are always glad to cooperate with INDUSTRIAL FINISHING magazine, because we think the publication is performing a real service to the industry.—CAVALIER CORP.

White Pickled Finish on Birch

Referring to a question and two answers, published under the above title in a recent issue of this magazine, I would like to add the following:

You can go about this as you would in antiquing or glazing a piece of painted furniture. After you have stained or prepared your wood and have given the surface one or two coats of lacquer sealer or shellac (whichever you may use) rub it down and wipe it clean. Then apply the white glaze. Don't attempt to do this on the bare wood, as you can not work the glaze in so well.

I would take soft paste white lead and mix it with either turpentine or lead mixing oil. If turpentine is used, a small amount of linseed oil and white drier should be added. This should be thoroughly mixed and thinned according to how you wish to glaze

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We have combined to an optimum degree the necessary qualities of tremendous hardness, great adhesion, smooth lustrous gloss, and freedom from haze, discoloration and wrinkling.

FORM-A-ROC

Baking schedule is of great flexibility, permitting from 5-50 minutes at 250-375° F.

FORM-A-ROC

No matter which of the present worthy finishes of this type you may be using or planning to use we sincerely recommend that you investigate

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CLEVELAND, O.

the work. Do not attempt to coat too much surface at a time, as it will set and begin to dry before you are ready to wipe it. Of course, you must let it set a short time so as to avoid wiping it all off.

For wiping, I suggest a wad or roll of lint-free cloth. Wipe the treated surface with the grain. This way you can get a streaked effect. You may start to blend it out with a cloth by stippling, or you can use a soft brush for blending.—J. K. COOPER.

A new portable electric sanding and rubbing machine has been developed and placed on the market by a manufacturer in Detroit, Mich.

Blanchit
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Wood Bleach for Satisfaction
New Work
or Refinishing, Modernizing
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Testing Viscosity by Bubble Method

THE BUBBLE method for judging the viscosity or "body" of varnish, lacquer or enamel is merely a refinement of the usual act of turning a bottle upside down to see how the contents

Fig. 1—Notice white mark near top of each tube, below the corks.

flow. This simple test can be surprisingly accurate and has long been used in some form by varnish makers.

When a tube is nearly filled with a liquid, corked and then inverted, the air bubble rises. And, conversely the liquid flows down through the annular opening around the air bubble. *The rate of upward travel of the air bubble in two or more tubes of different materials is proportional to the absolute viscosity of those liquids, providing the tubes have the same inside diameter.*

Directions for testing or comparing the viscosity of two or more liquids by the bubble method are as follows:

Fill each tube to the lower marked ring (see Fig. 1) with

liquid to be tested. Insert a cork to the upper ring. This will leave space for the air bubble. The size of the bubble can be regulated by adjusting the cork. Place the tubes of corked material in a holder, as shown in Fig. 2. Bring the bubbles to the closed end of the tubes; then quickly invert the tubes and compare the speed of bubbles rising in the samples with the speed of bubble rise in the standard material used for comparison.

The size of the bubble does not affect its speed, provided its length is greater than its diameter. The increased buoyancy due to the larger size bubble is offset by the greater friction along the sides of the tube. However, the eye can compare the speed of the bubbles rising with greater precision if the bubbles in all tubes are of the same size, as indicated in Fig. 1.

It is important to use clean dry tubes of exactly uniform inside diameter. A very little moisture or solvent on the inner walls of any tube will affect the speed of the bubble rise. It is real economy to have an ample supply of clean tubes for making tests. Certified tubes of uniform inside diameter, should be used.

Under the special plan of one concern that supplies viscosity

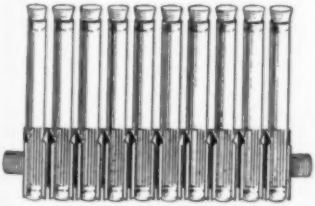

Fig. 2—Several viscosity tubes aligned side by side in a holder.

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Fully enclosed chassis. Feather-touch trigger . . Automatic needle release . . Exclusive straight-line valve action . . Anti-friction spray head . . Easily handled . . Simply adjusted . . Quickly, easily cleaned . . Reduces material waste . . Light, but rugged.

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★ *Complete Automotive and Industrial Spray Equipment* ★

tubes, the tubes purchased by any one customer, will match every other tube purchased by that same customer. Year after year the supply of these tubes is maintained and all are selected to the strict tolerance of plus or minus .025-mm. (.001-in.), therefore, no error is introduced in routine viscosity tests due to the fact that new tubes do not match old tubes.

This bubble test in closed tubes is especially suitable for determining the viscosity of liquids that contain volatile solvents, where there must be no loss by evaporation. When making these viscosity tests, it is important that all of the tubes and materials being used are of the same room temperature at the time. The tubes generally used are about ½-in. in diameter by 4½-in. long.

Editor's Note: Illustrations and information for the above were furnished through courtesy of R. P. Cargille, manufacturer of viscosity tubes.

Ultra Ray Pearl Essence
(always MORE brilliant)
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American Pearl Essence
Ultra Brilliancy!
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CROWN "22"
sets new value standard in a full size production gun with complete Fan and Fluid Control. Quart Container Assembly, etc., $22.50 as illustrated.

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Warehouses in Principal Cities

Spraying Over Suction Grating

UNIQUE FACILITIES for spray painting have just been installed in the lathe manufacturing plant of the Monarch Machine Tool Co., Sidney, Ohio. Lathes are now painted on the

Spray-painting lathes on the assembly floor of machine-tool manufacturer.

assembly floor, within a few feet of other operations, with no walls or partitions of any kind to screen off the sprayers.

Painting is done over a 7x12-ft. grating in the floor, through which air is exhausted at the rate of 200-ft. per minute. The fume-laden air is discharged into a large welded tank located directly below the grating, where a continuous cascade of chemically-treated water effectively segregates the solids in the paint fumes. This precipitates a

sponge-rubber-like substance which can be easily and conveniently cleaned from the pit. The air is then carried off through an underground tunnel to an outside exhaust stack.

Since the solids precipitated in the water are non-inflammable, there is no fire hazard. With the air suction down instead of up, the operator is never in a position where he can inhale the fumes. The draft is strong enough to effectively pull into the exhaust any spray not immediately deposited on the metal being painted.

The air, which is exhausted through the outside stack at the rate of 22,400-cu.ft. per minute, is first passed through eliminator packs at the opening of the stack funnel to remove all the water from the air, thus preserving the water and chemicals in it for continuous use.

Lathes are carried over the grating on small dollies which run on a track. This makes it possible to paint lathes of any length directly over the grill opening.

Free Book on Metal Spraying

Metallizing Co. of America, Inc., manufacturers of the Mogul metallizing gun, has just prepared a 26-page booklet, giving complete details on metal spraying, with new pictures and applications, listing equipment necessary for such work.

Metallizing Co. of America, Inc., has also brought out a Propane-Mogul, which they have spent considerable time developing to a high standard before releasing to the trade. Use of propane in this new gun reduces gas costs as much as $1.00 per hour of operation and increases speed of deposit 50%.

Booklet & propane bulletin can be obtained by addressing the company at 1351 E. 17th St., Los Angeles, Calif., or 562 W. Washington Blvd., Chicago, Ill.

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For New Popular Finishes

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"Raymix"

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CELLOPHANE:

"Spangles"

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PYROXALIN ENAMELS and LACQUER

Contains 253 pages; 12 chapters with headings as follows; I—Introduction, II — Pyroxalin, III—Solvents, IV — Non-Solvents, V — Plasticisers, VI—Gums and Resins, VII—Pigments and Dyes, VIII—Bronzing Liquids and Lether Dopes, IX—Metal and Wood Lacquers, X — Lacquer Enamels, XI—Application of Pyroxalin Solutions, XII — Miscellaneous Analytical Methods. In each chapter are numerous sub-headings fully clarifying each subject.

The author is Dr. S. P. Wilson, lacquer plant manager, and a practical chemist. Price..... **$3.50**

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EDITORIAL

Testing Paint Films at N. Y. World's Fair

One of the interesting and instructive exhibits at the N. Y. World's Fair shows several kinds of apparatus for making various tests to determine every property of paints, varnishes, lacquers and synthetic finishes. The hardness and thickness of the film can be determined accurately; also the drying time and coverage of the material. Resistance to grease, water, abrasion, shocks and bending are graphically demonstrated.

Pre-testing for resistance to grease is done by a machine that subjects the film to a rubbing action. It operates a series of felt pads which are kept saturated with fresh butter. They run continuously across the surface of the finish for 100,000 strokes. Similar tests are made with oleic acid, an active ingredient of kitchen grease that attacks finishes.

To check resistance to water and moisture, panels are submerged in racks in water heated to 100°F., to see if blistering takes place. A humidity cabinet exposes the finish to air saturated with water at a high temperature.

In the "Vapor Cup" test, the film is stripped from the finished object and stretched across the mouth of a cup containing water-absorbing materials. The cup is placed in a constant temperature and humidity cabinet and the amount of moisture passing through the film is measured.

The finish on stoves, refrigerators, linoleum and kitchen equipment, called upon to withstand contant wear by pots and pans and other utensils, undergoes an abrasion test. A stream of sand is played on a coated panel. Its effectiveness in wearing away the film is observed and time noted.

Covering power of a finish is determined with an instrument called a Cryptometer, measuring the thickness of a film which will just completely obscure a black background.

Chipping or flaking, the frequent results of the shocks to which many finishes are subjected, call upon two tests simulating the abuses of hard usage. An impact machine gives a measure of the resistance of the film to blows.

The bending test permits a standard basis of comparison on finishes for flaking. A machine bends a finished panel of specified gauge over a rod of specified size, controlling the curvature of the bend so that uniform results are obtained.

Such qualities as color and gloss are given careful scientific analysis. Maintaining a standard of color is not left to the vagaries of the human eye, but is put to an actual physical measurement of values. Gloss is measured by a machine which computes the amount of light reflected by a finish.

Hot Lacquer Methods Approved by Practical Finisher

A practical and experienced foreman finisher who has read INDUSTRIAL FINISHING for several years, and has written a number of excellent articles for us, offers the following timely comments about what was published in May 1939 issue on the subject of Hot Lacquer:

"This feature article on Hot Lacquer is well presented and should elicit many comments.

"You, of course, recall my article on heating enamels prior to spraying, published in the December 1936 issue? I have been obtaining such spectacular results by heating all my finishes that I can not comprehend why the industry as a whole has not resorted to this practice a long time ago. It certainly is logical to heat lacquers, synthetics and all organic finishes prior to spraying.

"I believe that it is comparably as advantageous to heat a wrinkle finish as it is to heat lacquer. Or, as far as that goes, it is just as advantageous to heat any heavy-bodied material. Production is often double by doing so, and furthermore, there is a decided improvement in the appearance of the finish."

Mr. Bede's 4½-page article in December 1936 issue of INDUSTRIAL FINISHING revealed some of his interesting experiences and methods in connection with the heating of various finishing materials to about 125°F. before spraying them. For example, in that article he said:

"Let us assume that we take two similar cans of paint; thin out one the usual 30% and the other only 10%. Spraying it in the ordinary manner, the former would give a thin finely-atomized film, and the latter a heavy coarse film. By thinning the paint only 5% and heating it to 125°F., we obtain the fine atomization and smooth film of the former, plus the heavy building properties of the latter. If the heavy build is not wanted, thin to about 20% before heating and obtain faster production, smoother film and less chances of sagging."

Newly Developed Products Give More Employment

Highlights in a News Bulletin that has just come to our desk, reveal that in the last 50 years, 15 of our major manufacturing industries, which have created 15,000,000 new jobs, have come from the inventive minds of the research workers and development engineers of this nation.

Examining the records of three large nationally known concerns,

one an advertiser in INDUSTRIAL FINISHING, we learn that one of these companies attributes 43% of its 1937 sales to new and improved products. The second company reports that 40% of its 1937 sales was accounted for by 12 new lines introduced during the preceding 10 years. The third firm declares that its new products, during the last seven years, account for more than 27% of its entire sales.

In conclusion, the bulletin states that the possibilities for the prosperity of the smaller companies through cooperative technical research and cooperative laboratories and through trade associations is endless.

Our trouble is that we do not have enough new ideas to make new industries. Our difficulty is not too much technical improvement but too little. The facts conclusively demonstrate that this is true. If 15 new industries can provide 15,000,000 new jobs, just imagine what a few new industries would do now.

A graceful well-styled blond-mahogany contemporary light-scaled modern desk and chair with curved, tapering legs, interesting scalloped apron and caned back. Made by Alonzi Furniture Co., and shown at the American Furn. Mart, Chicago, Ill.

Resinous Alcohol Makes Oil-Resistant Film

According to an article appearing in May issue of the INDUSTRIAL BULLETIN, published by Arthur D. Little, Inc., Cambridge, Mass., Polyvinyl Alcohol is a newly available resinous material that dissolves in water and then dries to a tough, transparent film. By suitable treatment, either before or after its formation, this film becomes resistant to water or actually insoluble in boiling water itself. Polyvinyl alcohol films, either as coatings or as a wrapping material, are reported as colorless, odorless, and tasteless, strongly resistant to oil and grease, dirt and solvents, highly impermeable to gases, and capable of being drawn tightly around corners and edges.

Solubility in water, greaseproofness, toughness, flexibility, and exceptional film-forming and adhesive power are the qualities likely to be principal assets of polyvinyl alcohol. They are of interest to the paper industry in which it is finding several uses, such as the adhesive in pigmented coatings, or for grease-proofing papers and paper boards likely to come in contact with oil materials, and to increase the wet strength of specialty papers. It may be added to other coating materials—starch, for example—to impart greater toughness and flexibility.

Plasticized polyvinyl alcohol can be molded into rubber-like

tubing, sheets, rods, diaphragms, etc., which possess its characteristic property of extreme resistance to all oils and most organic solvents. Special application for polyvinyl alcohol protective coatings include gloves and other protective clothing, which can be formed by coating or directly from the alcohol if desired, and silverware, which it protects against tarnishing.

To what extent this new product of acetylene, which in turn comes from coal, limestone and water, will find a market under American conditions in competition—in each of its several fields of application—with existing materials is an open question. Its industrial progress in Europe, however, and its peculiar properties assure it the interested attention of American manufacturers.

Letters from I. F. Readers

(Continued from page 9)

water-white pearl base lacquer, but even they will not guarantee their product against yellowing. Any information you may give us that will overcome our difficulties will be greatly appreciated.—H. D. Co. (Art Goods).

We would like to secure a list of manufacturers who specialize in pearl essence finish.—L. L. Co.

A pearl essence manufacturer, to whom we referred this inquiry, sent us a carbon copy of his reply, wherein we find the following interesting statements:

"Our product is pure white and, as a consequence, does not muddy colors where delicate tints are desired. Also a very clean blue gunmetal effect may be obtained through the use of this material due to its brilliance and very slight toning effects.

"We would suggest that in your experimental work with this product, you acquire lacquers formulated particularly for H Scale application.

"The method of application by spray is similar to the conventional methods of applying metallic powder finishes in order to properly leaf the brilliant particles for reflective appearance. In many instances it is desirable to tint the clear lacquers, in which H Scale is incorporated, very delicately with Prussian blue for the purpose of enhancing the brilliance or reflective characteristics of the material.

"If we may assist you in any way possible we will be very glad to do so . . . . "

Flock Finish

We are interested in what is known as Flock Finishes, and wonder if you can supply us with the names of manufacturers who market the necessary equipment and supplies. As we remember, in your March issue you published an article on this finish. We would appreciate your sending us another copy of INDUSTRIAL FINISHING for March.—B. Casket Co.

We are interested in locating a manufacturer of flock. The process of flock finishing was noted in the March issue of INDUSTRIAL FINISHING.—C. C. Co. (Fancy and Novelty Boxes).

A prominent manufacturer of all kinds of flocks, for use in finishing, advertises in every issue of INDUSTRIAL FINISHING, see page 63, May 1939 issue.—ED.

Hot Lacquer

In your April 1939 issue of INDUSTRIAL FINISHING you have an editorial on "Applying Lacquers Hot." Will you kindly refer us to manufacturers of this heating equipment? Also, where we can get full particulars and prices.—X. Co. Inc. (Mfr. of Electrical Equipment).

We note an editorial in your April issue of INDUSTRIAL FINISHING referring to "Applying Lacquers Hot." We would very much appreciate it if you would supply us with further information regarding this method of finish application.—A. Furn. Co.

See May issue of I. F.—ED.

Decals. Wanted in New Zealand and Australia

Having received the January issue of INDUSTRIAL FINISHING, I feel that I must again congratulate your magazine. Reading your article on Decalcomanias has brought to my mind how lacking Australia and New

Zealand are in this field. The possibilities for this class of work are enormous in these countries. Could you direct this letter to one or more manufacturers of decals who are in need of an agent for both New Zealand and Australia?

My personal idea is that perhaps they portray three or four different designs in such commodities as fruits, meats, ices, bread and also various products of many other commercial industries, so that practically all trades people could be contacted; also those trading under registered names and designs.

Should you contact a manufacturer, I would be greatly obliged if they would forward any literature, books, catalogs, etc., that would give me some knowledge of the designs, subjects and articles they are listing; also prices of same. Better still, if possible, have them send me some actual specimens.

I had the good fortune to meet your friend Mr. Eric Sangwell on his way back home to Australia, after his recent trip to your city. He spoke of the trend of industry; also the enormous factories in U. S. A., which were certainly astounding to us listeners. You certainly must have everything in a large way in U. S. A., but we still have our big game fishing here.—FRED W. HEARN, Auckland, N. Z.

Air-Dry Wrinkle

We are searching for an air-dry wrinkle finish that would be satisfactory in finishing our shoe tras, which have a wooden frame with a cardboard bottom. We would appreciate your informing us as to any paint manufacturer who might produce a wrinkle finish to meet our needs.—M. Shoe Tra Co.

Grained Transfers

In your April 1939 issue under the heading of "Letters from Readers," I notice that a concern requested names of manufacturers of grained transfers. Will you please send us this list, as we expect to have use for this type of material.—K. Electric Products Co.

Information has been given.—ED.

Improved Metal Finishes

We would appreciate it if you will kindly give us the names of the manufacturers who are producing "bronze-sparkle," etc., as referred to in Louis Nagel's article, "Improved Metal Finishes Now Available," in the May 1939 issue of your publication, page 27.—A. L. Co. (Designers & Manufacturers).

In May 1939 issue, page 27, we notice an article entitled: "Improved Metal Finishes Now Available." Please send us the names of the manufacturers who supply this "Metal-with-color Lacquer," which we wish to use on wood.—C. Mfg. Co. (Silverware, Jewelry & Display Cases).

Dual Spray Wanted

It has been suggested that we contact you with regard to spraying equipment which will handle dry powders and asphalt emulsions, simultaneously. If such equipment is available, it would enable certain of our customers to effect a considerable saving. We would appreciate your advice as to whether this idea is feasible and in line with recent developments.—K. F. Co.

"Qualasole" Is Found

As a result of our published inquiry about who makes "Qualasole" (May issue, page 7) several readers have written us to the effect that this is a product of Qualatone Products, Inc., 21 Gay St., New York, N. Y. It is a new french polish for french polishing, touching up or renewing a finish.—ED.

Flow Guns

On page 74 and 75 of your February issue of INDUSTRIAL FINISHING, you show several paint flow guns. Would you kindly forward to us the names of manufacturers of the guns illustrated in Figs. 3 and 4 of the article?—C. L. Co. (Metal Specialties).

Information supplied by letter.—ED.

Railway Car Painting

We have read with interest the article entitled "Railway Car Painting" in the April 1939 issue of INDUSTRIAL FINISHING. Since there are several points in connection with this article that we should like to discuss with the author, Mr. W. R. Allen, we would greatly appreciate it if you would supply us with his address.—K. G. Corp.

Silk Screen Stencils

Referring to your February issue, on page 41, you describe a silkscreen stencil process. We are very much interested in this, and would appreciate any and all information regarding the process. Please be sure to advise where we can secure the silk, as well as the other chemicals.—W. T. Co. (Distinctive Furniture).

Tear sheets of published articles and names of manufacturers and suppliers of materials and equipment have been sent to this inquirer.—ED.

Oven Bulletin Attractive

Oven and conveyor construction, heaters, heating systems, controlled and fuming zones, cooling section, oven operation and oven performance are some of the subjects treated and illustrated in the new Ross Metal Decorating Oven bulletin just published by J. O. Ross Engineering Corp., 350 Madison Ave., New York, N. Y. The bulletin has 12 pages 8½x11-in. and contains much of interest and value to every present and prospective user of bake-finishing ovens.

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